DOCUMENTATION RECORDS
FOR
HAZARD RANKING SYSTEM

INSTRUCTIONS: The purpose of these records is to provide a convenient way to prepare an auditable record of the data and documentation used to apply the Hazard Ranking System to a given facility. As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference that will make the document used for a given data point easier to find. Include the location of the document and consider appending a copy of the relevant page(s) for ease in review.

FACILITY NAME: Penn Central; AKA: Lake Calumet Quad.

LOCATION: 810 E. 12th St./12400 S. Cottage Grove Avenue, Chicago, Illinois

GROUND WATER ROUTE

1 OBSERVED RELEASE

Contaminants detected (5 maximum):

There is no documented observed release to ground water.

Rationale for attributing the contaminants to the facility:

NA

* * *

2 ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifers(s) of concern:

The aquifers of concern consist of sand and gravel in the glacial drift and silurian dolomite which underlies the glacial drift (Ref.6: p. 13 out of 64 pages and Ref. 7, p. 73 out of 79 pages). Continued on Attached Sheet

Depth(s) from the ground surface to the highest seasonal level of the saturated zone [water table(s)] of the aquifer of concern:

The highest seasonal level of the saturated zone is ~ 2.1 feet based on ground water levels measured in on-site monitoring wells (Ref.6: p. 33, 34 out of 64 pages)

Depth from the ground surface to the lowest point of waste disposal/ storage:

- Wastes were abandoned in the basement of a grain elevator that was present on-site at one time (Ref. 9: p. 3+4 out of 4 pages)
- No information is available on the depth of the waste disposal

2.1 feet (depth to water table) – 0 feet (unknown waste depth) = 2.1 Feet

Assigned 2 Value = 3 (0 to 20 feet)
(Ref.1: 47FR 31224)

Ground Water Route

Description of Aquifer(s) of Concern -continued

~ Sixty-five feet of glacial drift are located above the Silurian dolomite in the area of the site (Ref. 6: p. 13 out of 64 pages). Generally, in the Chicago area the sand and gravel in the glacial drift and the Silurian dolomite beneath the drift are hydrologically connected (Ref. 7: p. 73 out of 79 pages).

There is "a tendency for downward vertical flow of water in the fill toward the bedrock aquifer" in the area of the site (Ref. 6: p. 35 out of 64 pages).

An area well log shows the interconnected sand and gravel / silurian dolomite bedrock aquifer extending down to at least 420 feet below the ground surface (Ref. 8).

The shallow aquifer is separated from the deeper Cambrian-Ordovician aquifer by Maquoketa Shale (Ref. 7: p. 73 out of 79 pages and Ref. 6: p. 13 out of 64 pages).

Net Precipitation

Mean annual or seasonal precipitation (list months for seasonal):

$\frac{36" - 32"}{3.0cm - 0cm} = \frac{36" - X}{3.0cm - 1.9cm}$ $X = 33.20"$

(Ref. 12: p. 43 of 80)

Mean annual lake or seasonal evaporation (list months for seasonal):

$\frac{30" - 28"}{1.1cm - 0cm} = \frac{30" - X}{1.1cm - .8cm} = 29.45"$

(Ref. 12 : p. 63 of 80)

Net precipitation (subtract the above figures):

$33.20" - 29.45" = 3.75"$

Assigned value = 1

(Ref. 1 : 47 FR 31224)

Permeability of Unsaturated Zone

Soil type in unsaturated zone: Silty clay with trace gravel, sand, and shale - based on borings obtained at Penn Central site and another near-by site

(Ref. 6 : p. 1, 3, 14, 22 out of 64 pages + Appendix A to Ref. 6 - Borings 6105 (3 pages), 6132 (1 pg.), and 6133 (1 pg.).

Permeability associated with soil type:

$10^{-5} - 10^{-7}$ cm/sec

Assigned value = 1 (Ref. 1: 47 FR 31224)

Physical State

Physical state of substances at time of disposal (or at present time for generated gases):

Liquid hexane wastes were found in the basement of a grain elevator that was present on-site at one time

* * *

Ref. 9: p. 3-4 out of 4

Ref. 10: p. 2+3 out of 3

Liquid: Assigned value = 3 (Ref. 1: 47 FR 31229)

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:
Wastes were abandoned in the basement of a grain elevator that was present on-site at one time (Ref. 9: p. 3+4 of 4 and Ref. 10: p. 2+3 of 3). The elevator was eventually demolished- (Ref. 11: p. 6 of 20, Ref. 9: p. 4 of 4, + Ref. 10 p. 3 of 3)
No information on integrity of basement is available- (Ref. 11: p. 6 of 20)
Method with highest score:
Surface impoundment - Assume basement as - unsound run-on diversion structure; no liner; or incompatible liner
Assigned Value = 3 (Ref. 1: 47FR 31229)

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:	Toxicity	Ref. 10	Persistence	
Cadmium	3	p. 612	3	Ref. 1 47FR 31229
Mercury	3	p. 1751	3	
Lead	3	p. 1689 of 3124 pages	3	

(Ref. 9: p. 4 of 4)

Compound with highest score:
Cadmium, Mercury, Lead
Toxicity / Persistence = 18 (score)
(Ref. 1: 47FR 31229)

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):
400,000 Gallons of "hexane pollutants abandoned in basement of grain elevator" were removed
(Ref. 9: all; Ref. 10: all)
Basis of estimating and/or computing waste quantity:
1 Drum = 50 gallons 400,000 ÷ 50 =
8,000 Drums = 400,000 gallons
8,000 Drums: Assigned Value = 7 (Ref. 1: 47FR 31229)

* * *

5 TARGETS

Ground Water Use **Assigned value = 2 (Ref. 1 47FR 31230)

Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

Drinking Water with municipal water from alternate unthreatened sources presently available *
Residences with private drinking water wells exist within the 3-mile radius (Ref. 15) - The City of Chicago supplies these residents with bottled water (Ref. 14).

Distance to Nearest Well

Location of nearest well drawing from aquifer of concern or occupied building not served by a public water supply:

134th Place, Chicago (Ref. 8)
T. 37N, R. 14E, Sec. 34
Maryland Subdivision
well depth = 210 feet

Distance to above well or building:

Nearest well is 1.3 - 1.5 miles from the site (Ref. 2, Ref. 15)
Assigned value = 2 (Ref. 1: 47FR 31231)

Population Served by Ground Water Wells Within a 3-Mile Radius

Identified water-supply well(s) drawing from aquifer(s) of concern within a 3-mile radius and populations served by each:

~8 private drinking water wells within the 3 mile radius draw from the aquifer of concern (Ref. 14, Ref. 15)

(See Attachment) 8 X 3.8 = 30.4

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre):

Areas within the 3 mile radius are highly populated and industrialized - there is no farmland present (Ref. 2)

Total population served by ground water within a 3-mile radius:

8 X 3.8 = 30.4
~30 people served by ground water
Assigned Value = 1 (Ref. 1: 47FR 31233)

Population Served by Ground Water Wells continued

- Chicago (includes Hegewisch - Ref. 2) receives drinking water from Lake Michigan (Ref. 17, Ref. 16: p. 23 of 195) which is > 3 miles from the site (Ref. 2).
- Calumet Park and Dolton receive drinking water from the Chicago City supply (Ref. 17, Ref. 16: p. 17, 39 of 195)
- Riverdale and Thornton receive drinking water from the Chicago City Supply (Ref. 16: p. 137, 169 of 195)

SURFACE WATER ROUTE Surface Water Route Score = 0

1 OBSERVED RELEASE See Attached Page for Explanation.

Contaminants detected in surface water at the facility or downhill from it (5 maximum):

There is no documentation of an observed release to surface water.

Rationale for attributing the contaminants to the facility:

NA

* * *

2 ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

NA

Name/description of nearest downslope surface water:

NA

Average slope of terrain between facility and above-cited surface water body in percent:

NA

Is the facility located either totally or partially in surface water?

NA

Surface Water Route

Penn Central Site / ILD980606362

According to U.S.G.S. topographic maps, a major expressway (I-94) should prevent any potential contamination from the site from migrating to Lake Calumet. Railroad tracks, a major Street (130th Street), industrialized areas, and populated areas should prevent run-off to surface water such as the Little Calumet River and Lake Cottage Grove. Intervening terrain is obstructed and should therefore prevent any potential contamination from reaching downslope surface water bodies.

(Ref. #2)

Is the facility completely surrounded by areas of higher elevation?

NA

1-Year 24-Hour Rainfall in Inches

NA

Distance to Nearest Downslope Surface Water

NA

Physical State of Waste

NA

* * *

3 CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

NA

Method with highest score:

NA

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated

NA

Compound with highest score:

NA

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

NA

Basis of estimating and/or computing waste quantity:

NA

* * *

5 TARGETS

Surface Water Use

Use(s) of surface water within 3 miles downstream of the hazardous substance:

NA

Is there tidal influence?

NA

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

NA

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

NA

Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less:

NA

Population Served by Surface Water

Location(s) of water-supply intake(s) within 3 miles (free-flowing bodies) or 1 mile (static water bodies) downstream of the hazardous substance and population served by each intake:

NA

Computation of land area irrigated by above-cited intake(s) and conversion to population (1.5 people per acre):

NA

Total population served:

NA

Name/description of nearest of above water bodies:

NA

Distance to above-cited intakes, measured in stream miles.

NA

AIR ROUTE

1 OBSERVED RELEASE

Contaminants detected:

No Air Monitoring Data

Date and location of detection of contaminants

NA

Methods used to detect the contaminants:

NA

Rationale for attributing the contaminants to the site:

NA

* * *

2 WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound:

NA

Most incompatible pair of compounds:

NA

Toxicity

Most toxic compound:

NA

Hazardous Waste Quantity

Total quantity of hazardous waste:

NA

Basis of estimating and/or computing waste quantity:

NA

* * *

3 TARGETS

Population Within 4-Mile Radius

Circle radius used, give population, and indicate how determined:

0 to 4 mi 0 to 1 mi 0 to 1/2 mi 0 to 1/4 mi

NA

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

NA

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

NA

Distance to critical habitat of an endangered species, if 1 mile or less:

NA

Land Use

Distance to commercial/industrial area, if 1 mile or less:

NA

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

NA

Distance to residential area, if 2 miles or less:

NA

Distance to agricultural land in production within past 5 years, if 1 mile or less:

NA

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

NA

Is a historic or landmark site (National Register or Historic Places and National Natural Landmarks) within the view of the site?

NA

FIRE AND EXPLOSION

1 CONTAINMENT

Hazardous substances present:

NA

Type of containment, if applicable:

NA

According to information obtained from the Chicago City Fire Department (Ref. 3, p. 142/2) and the IL State Fire Marshall's Office (Ref. 4), no information is available on whether or not a local or state fire marshall has declared the site a significant fire or explosion threat to the population or the environment or whether or not there is a *** demonstrated fire and explosion threat from the site based on field observations.

2 WASTE CHARACTERISTICS

Direct Evidence

Type of instrument and measurements:

NA

Ignitability

Compound used:

NA

Reactivity

Most reactive compound:

NA

Incompatibility

Most incompatible pair of compounds:

NA

* * *

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility:

NA

Basis of estimating and/or computing waste quantity:

NA

* * *

3 TARGETS

Distance to Nearest Population

NA

Distance to Nearest Building

NA

Distance to Sensitive Environment

Distance to wetlands:

NA

Distance to critical habitat:

NA

Land Use

Distance to commercial/industrial area, if 1 mile or less:

NA

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

NA

Distance to residential area, if 2 miles or less:

NA

Distance to agricultural land in production within past 5 years, if 1 mile or less:

NA

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

NA

Is a historic or landmark site (National Register or Historic Places and National Natural Landmarks) within the view of the site?

NA

Population Within 2-Mile Radius

NA

Buildings Within 2-Mile Radius

NA

DIRECT CONTACT

1 OBSERVED INCIDENT

Date, location, and pertinent details of incident:

There have been no observed incidents

* * *

2 ACCESSIBILITY

Describe type of barrier(s):

The site is not fenced
(Ref. 11, p. 6 of 20)

Assigned Value = 3 * * *
(Ref. 1 : 47FR 31241)

3 CONTAINMENT

Type of containment, if applicable:

It is uncertain if the site has been sufficiently covered. Ref. 9: p. 4 of 4, Ref. 6: p 10 of 64 * * * and Ref. 5: all

4 WASTE CHARACTERISTICS

Toxicity

Compounds evaluated:	Toxicity	Ref. 10
Cadmium	3	p. 612
Mercury	3	p. 1751
Lead	3	p. 1689

(Ref. 9 p. 4 of 4) of 3124 pages

Compound with highest score:

Cadmium, Mercury, Lead

Toxicity Assigned Value = 3 (Ref. 1 47FR 31241)

5 TARGETS

Population within one-mile radius - See Attached Calculations and References

8,486 people

Assigned Value = 4 (Ref. 1: 47FR31241).

Distance to critical habitat (of endangered species)

There are no endangered species within a 3mile radius of the site Ref. 20 - all and Ref. 19: p. 3,4,11, 12,13,14 of 89 pg.'s

Assigned Value = 0

Ref. 1 : 47FR 31241

Population Calculations

- The population in Chicago in 1982 = 2,940,000 per 228.135 square miles which equals 12887.11 people/mile^2 (Ref. 18: p. 21,121 of 128)

- by using a dot grid to estimate population of the city of Chicago that falls within a 1 mile site radius (Ref. 2), the following calculations result:

from dot grid → $\frac{31}{64}$ x 12887.11 people/mi.^{2} = 6242.19

\+ 21 dwellings (Ref. 2) x 3.8 (Ref. 147FR31241) = 79.80

\+* population in Housing Complex (Ref. 2) and (Ref. 21, 2 pages) = 2163.81

Total = 8485.80

Total pop. in 1 mi. radius = 8,486

* Calculations for Housing Complex Population (Ref. 21, 2 pages):

162 buildings
w/ total of 1465 apartments
w/ total of 5,475 people

$\frac{5475}{1465}$ = 3.74 people/apt.

$\frac{1465}{162}$ = 9.04 apts./bldg.

(3.74)(9.04) = 33.81 people/bldg.

64 bldgs. (Ref. 2) x 33.81 = 2163.81
(in 1 mile radius)

HRS DOCUMENTATION LOG SHEET

SITE NAME Penn Central
CITY Chicago STATE IL
IDENTIFICATION NUMBER ILD980606362

REFERENCE NUMBER	DESCRIPTION OF THE REFERENCE
#1	Federal Register, July 16, 1982.
#2	U.S.G.S. Topographic Maps, 7.5 minute series, Lake Calumet, IL Quadrangle: Original date: 1965; Photorevised 1973; Photoinspected 1977, Blue Island, Original date: 1963; Photorevised 1973; Photoinspected 1978.
#3	Phone Log: To: Captain Drisco / Chicago City Fire Dept., From: Cynthia Pugh - Environmental Scientist (FIT) - Ecology and Environment, Inc. 9-22-86, 9:35 AM, (312) 744-4762, 2 pages.
#4	Phone Log: To: Mr. Brezinski - IL State Fire Marshall's Office; From: Cynthia Pugh - Environmental Scientist (FIT) - Ecology and Environment, Inc., 9-22-86, 9:40 AM, (312) 917-2693, 1 page.
#5	Phone Log: To: Brad Benning - E.R. - IEPA - Northern Region, From: Cynthia Pugh - Environmental Scientist - (FIT) - Ecology and Environment, Inc., 9-22-86, 11:03 AM, (312) 345-9780, 1 page.
#6	Report: Contamination Survey, Michael G. Sibert, P.E.; K. R. Huibregtse, P.E., C. W. Pfingsten, P.E.; 4-26-82, STS Consultants Ltd., 64 pages + Cover letter, Table of Contents, Introduction, and Appendices.

HRS DOCUMENTATION LOG SHEET

SITE NAME Penn Central
CITY Chicago STATE IL
IDENTIFICATION NUMBER ILD980606362

REFERENCE NUMBER	DESCRIPTION OF THE REFERENCE
#7	Summary of the Geology of the Chicago Area, H.B. Willman, 1971, Circular 460 / Illinois State Geological Survey, 79 pages.
#8	Well Logs, Geological and Water Surveys, 1 page.
#9	Memo: To: Mr. Richard Bartlet (sic), Region V Superfund Coordinator - U.S. EPA - Region V; From: Elise E. Singer - Wildman, Harrold, Allen, and Dixon - Representative of Penn Central; 11-22-82; Subject: Explanation of Amendment to Original 103(c) Notification of Hazardous Waste Site which is attached, total of 4 pages.
#10	103(c) Notification of Hazardous Waste Site (Amended), Person Required to Notify: Penn-Central Corporation, 3 pages.
#11	Site Inspection Report, 6-10+11-86, Thomas Gladan - Hydrogeologist, Ecology and Environment, Inc., 6-11-86, 20 pages.
#12	Climatic Atlas of the United States, U.S. Department of Commerce, 1968, reprinted 1979, 80 pages.
#13	Sax, Irving J. "Dangerous Properties of Industrial Materials", 6th Edition, 1984, 3124 pages.

HRS DOCUMENTATION LOG SHEET

SITE NAME Penn Central
CITY Chicago STATE IL
IDENTIFICATION NUMBER ILD980606362

REFERENCE NUMBER	DESCRIPTION OF THE REFERENCE
#14	Phone Log: To: Cindy Countanis - Public Relations.
	Individual - Chicago Water Department, From: Cynthia
	Pugh - Environmental Scientist (FIT) - Ecology and
	Environment, Inc., 9-23-86, 8:44AM, (312) 744-7001, 1page.
#15	Phone Log: To: Mr. Adduci - City of Chicago Water Dept: -
	Commissioner's Office; From: Sue Ryan - Chemical
	Engineer - (FIT) - Ecology and Environment, Inc., 11-27-85,
	11:10 AM, (312) 744-7001, 1page.
#16	IEPA Public Water Supply Division - Public Water Sources
	File Information, 195 pages.
#17	Phone Log: To: Ralph Falkenfall - City of Chicago
	Water Dept., From: Sue Ryan - Chemical Engineer - (FIT),
	Ecology and Environment, Inc., 7-16-84, 1:15 pm, (312)
	744-7001, 1page.
#18	Rand McNally Road Atlas, Rand McNally + Company,
	1984, 128 pages.
#19	Endangered Species, U.S. Department of the Interior -
	Fish and Wildlife Service, Great Lakes Region,
	pages 3, 4, 11, 12, 13, 14 of 89 pages.
#20	Phone Log: To: Wayne Fisher - Wildlife Biologist - Fish and
	Wildlife Service - Field Office: Rock Island, IL; From: Cynthia
	Pugh - Environmental Scientist (FIT) - Ecology and Environment, Inc,

HRS DOCUMENTATION LOG SHEET

SITE NAME Penn Central
CITY Chicago STATE IL
IDENTIFICATION NUMBER ILD980 606 362

REFERENCE NUMBER	DESCRIPTION OF THE REFERENCE
Ref. 20 continued...	9-24-86, 12:50pm, (309) 793-5800, 1page.
#21	Phone Log: To: Reference Librarian (Jan): Chicago Public Library: Government/Public Dept.; From: Cynthia Pugh - Environmental Scientist (FIT) - Ecology and Environment, Inc., 9-24-86, 5:40pm, (312) 269-3002, 2pages.

PHONE CONVERSATION LOG

DATE 9-22-86 TDD# R05-8303-01J

TIME 9:35 AM

SITE Penn Central

CONTACT Captain Drisco- Chi. City Fire Dept. PHONE (312) 744-4762

(1) REFERENCE = #3
SITE NAME Penn Central
SITE ID ILD 980606362

SUBJECT Fire/Explosion Threat

- I called the Chicago Fire Dept. Information number and explained that I needed information on whether or not a site in Chicago was ever declared a fire or explosion threat. I was transferred to the Fire Prevention Bureau at 744-4762. I relayed this information to them, and they transferred me to the Chicago Fire Dept. I spoke to a fireman and relayed this information to him. He transferred me to Captain Drisco.
- I asked Captain Drisco if he had information on whether or not a particular site in Chicago has ever been declared a fire or explosion threat to the population or environment. I explained that E&E is a private contractor to the U.S. EPA and that I needed documentation on the site pertaining to fire and explosion conditions. Captain Drisco said →

Cynthia Pugh

DATE 9-22-86

PHONE CONVERSATION LOG

DATE 9-22-86 TDD# R05-8303-01-J

TIME 9:35 AM

SITE Penn Central

CONTACT Captain Drisco - Chi. City Fire Dept. PHONE (312) 744-4762

(2)

SUBJECT Fire / Explosion Threat

that he is not familiar with that type of information regarding Chicago sites. He said that he did not think the Chi. City Fire Dept. handled that type of information. He suggested that I call the IL State Fire Marshall's office on Randolph St.

Cynthia Pugh

DATE 9-22-86

PHONE CONVERSATION LOG

DATE 9-22-86 **TDD#** R05-8303-01 J

TIME 9:40 AM

SITE Penn Central

CONTACT Mr. Brezinski - from the IL State Fire Marshall's Office **PHONE** (312) 917-2693

REFERENCE #4
SITE NAME Penn Central
SITE ID ILD980606362

SUBJECT Fire / Explosion Threat

I called the IL State Fire Marshall's office at 100 W. Randolph, Chicago and spoke to Mr. Brezinski. I explained to Mr. Brezinski that E+E is contracted to the U.S. EPA and that I need to find out whether or not a particular site in Chicago has been certified by a State or local fire Marshall as a significant fire or explosion threat to the population or environment or if there is a demonstrated fire and explosion threat from the site based on field observations. Mr. Brezinski said that the IL State Fire Marshall's office does not have this information on sites in the city of Chicago. He said to call the Chi. City Fire Dept. I explained to Mr. Brezinski that I had called the Chi. City Fire Dept. and was told that they did not have the information and that I should call the IL State Fire Marshall's office. Mr. Brezinski again stated that the IL State Fire Marshall's office does not have this type of information on Chicago City sites, He said that they would not have a file on a Chicago site.

Cynthia Pugh

DATE 9-22-86

PHONE CONVERSATION LOG

DATE 9-22-86 TDD# R05-8303-01J

TIME 11:03 AM

SITE Penn Central

CONTACT Brad Benning - E.R. IEPA - Northern Region PHONE (312) 345-9780

REFERENCE #5
SITE NAME Penn Central
SITE ID ILD980606362

SUBJECT Cover at Penn Central Site

I called Brad Benning from the IEPA and asked him if he knew if the Penn Central Site had ever been covered with the required amount of two feet of cover material. Mr. Benning said that as he recalls, lime was added to the basement to absorb some of the waste that was disposed of in the old grain elevator structure. The building was also demolished. Mr. Benning said that he has no idea if any kind of cover was ever applied to the site. I asked him if anyone else there would have information on cover application at the site, and he said that he doubts that anyone there would have this information as no one has been involved with the site since that time.

Cynthia Pugh

DATE 9-22-86

STS Consultants Ltd.

Report

Project No. 22063

Date April 26, 1982

REFERENCE #6

SITE NAME Penn Central

SITE ID ILD980606362

Client

State of Illinois - Attorney General
Environmental Division

Project Name

Contamination Survey

Location

U.S. Scrap Corporation
Penn Central Corporation
Chicago, Illinois

STS Consultants Ltd.
111 Pfingsten Road
Northbrook, Illinois 60062
312-273-5440

April 26, 1982

State of Illinois - Attorney General
Environmental Control Division
188 West Randolph Street
Suite 2315
Chicago, Illinois 60601

Attention: Dr. Howard O. Chinn

STS Project No. 22063

Reference: Contamination Surveys - U.S. Scrap Corporation and Penn Central Corporation Sites in Chicago, Illinois

Gentlemen:

We have completed the contamination surveys at the above-referenced sites. These surveys were authorized by the Illinois Attorney General's Office in order to evaluate site specific contamination caused by previous waste disposal operations.

The U.S. Scrap Site comprises approximately 4.5 acres and is located west of South Cottage Grove Avenue; east of the Chicago and Western Indiana Railroad tracks; west of the Metropolitan Sanitary District of Greater Chicago (MSDGC), Calumet Sewage Treatment Plant; and south of the Stainless Processing Company, Inc, property at 11900 South Cottage Grove Avenue.

The Penn Central Site is located southwest of the Michigan Central Railroad in an area known as the Michigan Central Railroad yards. It is in the general vicinity of the U.S. Scrap Site however it is located just east of the MSDGC, Calumet Sewage Treatment Plant property.

The conclusions presented in this report are based upon field exploration work which included drilling eight soil borings and installing eight subsequent monitoring wells (six at the U.S. Scrap Site and two at the Penn Central Site), a geophysical survey, test pits, laboratory testing, and engineering analysis. It should be noted that all chemical analyses were performed by the Illinois Environmental Protection Agency (Illinois EPA). Data which was obtained from the field explorations and laboratory testing programs is included in the Appendix of this report.

If you have any questions with regard to the information contained in this report, or if we may be of any further assistance, please do not hesitate to contact our office.

Very truly yours,

STS CONSULTANTS, LTD.

Michael G. Sibert, P.E.
Project Geotechnical Engineer

Kathryn R. Huibregtse, P.E.
Project Chemical Engineer

Charles W. Pfingsten, P.E.
Principal Engineer

MGS/ms

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

INTRODUCTION

This contamination survey was performed by STS Consultants Ltd (formerly Soil Testing Services, Inc.) for the Illinois Attorney General at sites operated by Steve Martell in Chicago, Illinois. Our work was authorized by Dr. Howard O. Chinn from the Attorney General's Office, and was performed under contractual agreements dated February 1, 1981 and July 1, 1981.

The purpose of this contamination survey was to evaluate the two sites with regard to contamination by previous waste disposal activities and to recommend conceptual remedial action options for site clean-up.

The so-called U.S. Scrap and Penn Central Sites are located in the southern part of Chicago, Illinois at the general locations shown on Figure 1, which is a photocopy of the 1963 United States Geological Survey (USGS) map of the Lake Calumet quadrangle. Both sites have apparently extensive histories of waste disposal activities which are described in the enclosed section, SITE HISTORIES.

In order to evaluate the degree of contamination at the two sites, a thorough field exploration program was developed. This program included the following:

1. Drilling eight soil borings (six at the U.S. Scrap Site and two at the Penn Central Site) at the locations shown on Figures 1, 2, and 3.

2. Installing ground water monitoring wells in each borehole at the locations shown on Figures 1, 2, and 3.

3. Performing a magnetometer survey along the approximate traverse lines shown on Figures 2 and 3.

4. Excavating test pits at the locations shown on Figures 2 and 3.

5. Obtaining ground water samples from the wells, soil samples from the borings, samples from the test pit excavations, and surface samples at the locations shown on Figure 2 for chemical analyses which were performed by the Illinios EPA.

The results of the field exploration program are included in the Appendix. These results were used in developing the conclusions and recommendations which are presented in this report.

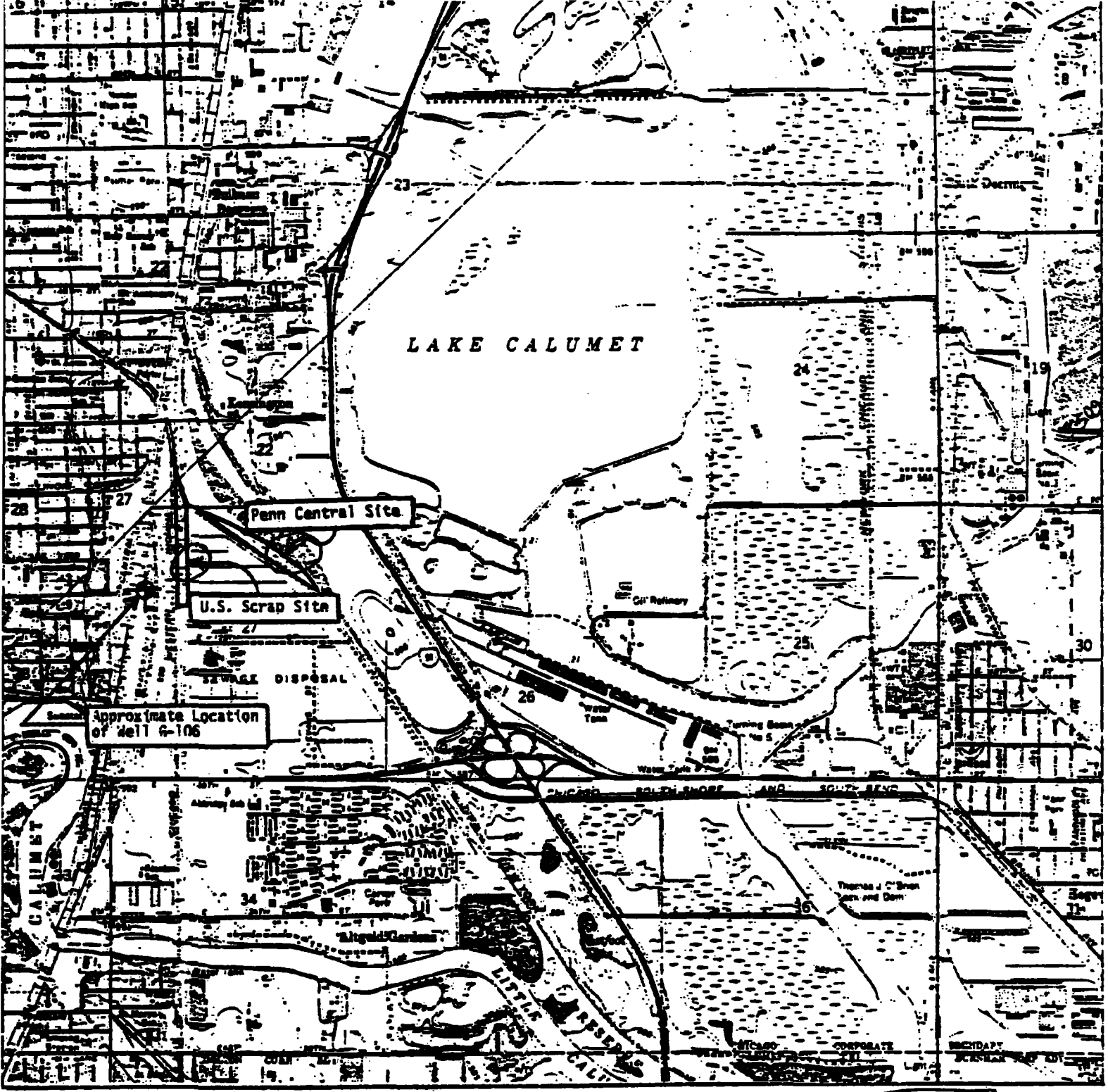


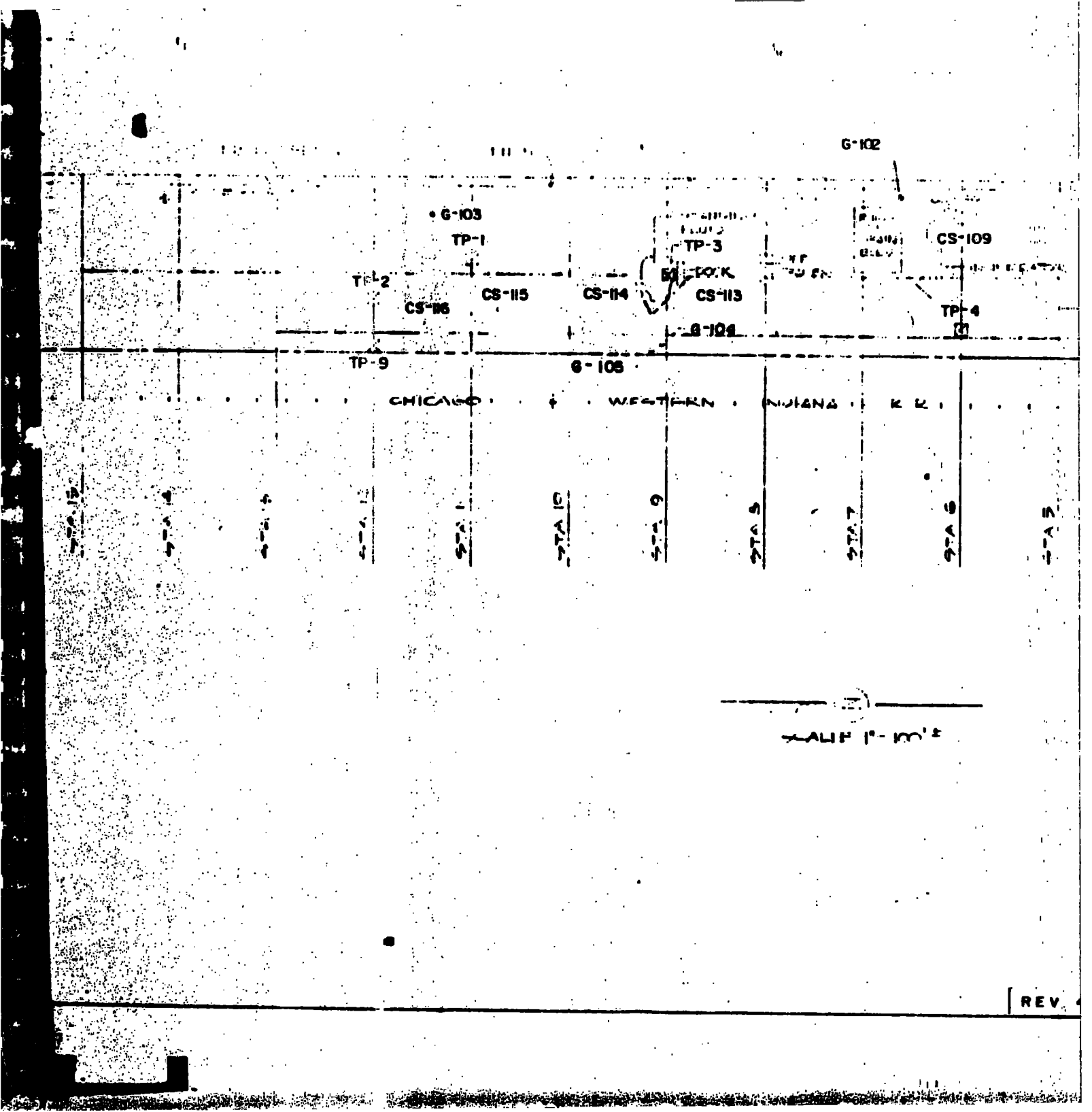
FIGURE 1

Page 3

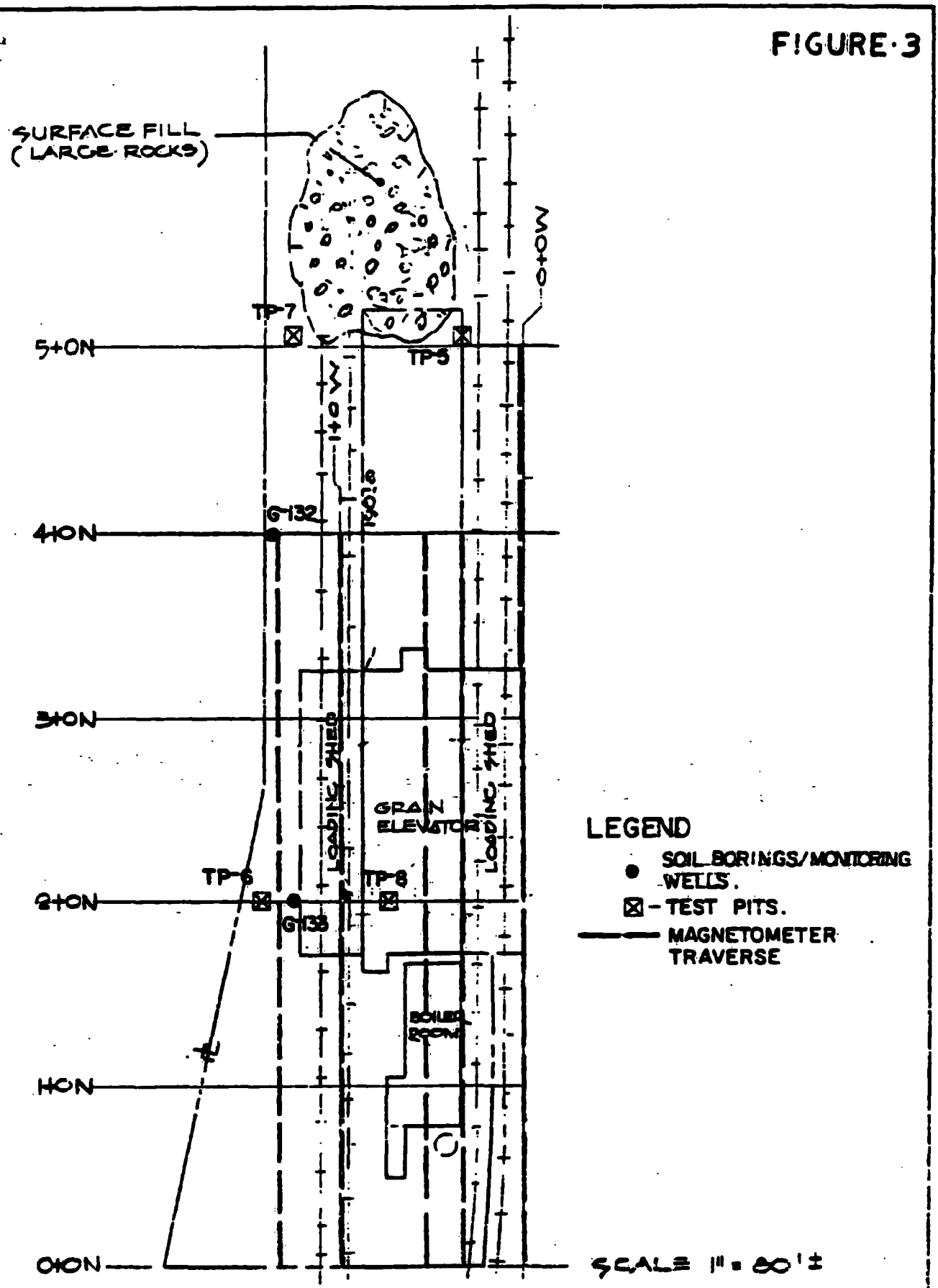
Approx. Scale in Miles

U.S. SCRAP and PENN CENTRAL SITES

United States Geological Survey
Topographic Map of Lake Calumet (Illinois) Quadrangle
7.5 Minute Series - 1963


G-102
G-103
TP-1
TP-2
TP-3
TP-4
CS-109
CS-113
CS-114
CS-115
CS-116
G-104
TP-9
G-105
CHICAGO WESTERN INDIANA R R
STA 10
STA 9
STA 8
STA 7
STA 6
STA 5
SCALE 1"-100'
REV.

FIGURE·3



FIELD EXPLORATION LOCATION DIAGRAM
PENN CENTRAL SITE
CHICAGO , ILLINOIS

SOIL TESTING SERVICES, INC.
111 PFINGSTEN ROAD
NORTHBROOK ILLINOIS 60062

APP	MES	6-3-1981	22063

REV. 3-23-1982 by MGS

SITE HISTORIES

STS performed a records and literature search of the U.S. Scrap and Penn Central Sites in order to facilitate the contamination survey. The histories of these sites, so far as we could learn, are described below and are subdivided into the two sites.

U.S. Scrap Site

A malting plant (consisting of at least one large grain elevator, one tall processing building, four 50 ft diameter steel storage tanks, eight smaller diameter concrete silos and several single story brick buildings) existed at the site from sometime prior to 1908 until approximately 1967. Ground surface around the malting plant was fairly level, usually ranging from +8 to +10 Chicago City Datum (CCD).

Between 1938 and 1949, the northernmost sludge ponds at the adjacent MSDGC Sewage Treatment Plant had been constructed.

Between 1949 and 1958, more sludge lagoons were constructed at the MSDGC property, east of those referenced above.

Between 1958 and 1967, the large grain elevator at the malting plant was evidently demolished and the ground surface was raised significantly to form a "hill" in the northern part of the property. It appears likely that rubble from the grain elevator demolition was used to fill the north section of the site.

A 1972 drawing developed by Mr. H.C. Porter entitled: "Liquid Waste Disposal at the U.S. Scrap Corporation, Chicago, Illinois Site", indicated that the top of the previously mentioned rubble "hill" was at approximate elevation +22 CCD, while the rest of the property was generally between +11 and +12 CCD. An incinerator was indicated on these plans and this incinerator still existed at the time of our field exploration program in 1981. Several depressions were noted in the southern part of the property on this drawing. Otherwise, the original malting plant appears to have remained intact. There were also various areas of steel scrap debris and semi-trailers present on the site at this time.

We have verified the site uses with air photos and other information. For instance, an April 1973 air photo indicates continued use of the site as a waste disposal area. In that photo, there appears to be a depression or pit immediately to the north of the old brick buildings which existed on the malting plant property. The air photo also indicates several ponds in the southern section of the property. By the time this photo was taken, a drainage ditch along the east side of U.S. Scrap property had been constructed and there was a significant amount of liquid in the ditch noted in the air photo. There were also many semi-trailers parked throughout the site.

In 1975, Mr. Porter generated another survey of the site which was titled: "Proposed Ditch and Pond Construction". This survey indicated that the four large steel tanks had been removed and that the grain elevator processing building had been demolished, along with the other old brick buildings on the property. The incinerator and the eight

concrete tanks, however, still remained. Also, there were several new ponds, averaging 3 ft deep, along the western property line. The ponds toward the south end of the site had apparently been filled by this time. The previously mentioned "hill" on the north end of the site (suspected to contain the remains of the old grain elevator) had a new maximum elevation of +18 CCD which was 4 ft lower than the maximum elevation mentioned in Mr. Porter's 1972 report. What appeared to have happened was that the "hill" had been graded toward the northeast to create a lower and flatter "hill" than had originally existed.

We also reviewed a 1978 air photo which showed conditions similar to those described in Mr. Porter's 1975 report. At the time this air photo was taken, most of the site appeared to be relatively clean and no barrels were noted in the photo. Several semi-trailers did remain on the site however.

Evidently between 1978 and 1980 the site was reused as a disposal area because various pieces of correspondence from the Illinois EPA indicated that as many as 400 55-gal barrels were present on the site during this time.

Field observations made in May of 1981 indicated that the barrels noted in 1980 had been removed. The pit immediately to the north of the old brick buildings (observed in the April, 1973 air photo mentioned previously) still remains in the 1981 observations, as do several ponded areas along the western edge of the site. Numerous small ponds containing dark, oily fluids could be seen throughout the site in May of 1981. The only structures remaining on the site in these observations were the eight concrete silos and the abandoned incinerator.

Our research records indicate that as early as July of 1971 the U.S. Scrap Site was considered to present a pollution problem. Various complaints were lodged against U.S. Scrap by MSDGC, and U.S. Scrap was periodically ordered to implement rehabilitation measures on their site. The measures included construction of a containment berm and drainage ditch along the east side of the site which were intended to prevent runoff to the MSDGC property. Even with the remedial construction which was implemented, complaints continue to emanate from the MSDGC until the present time.

Penn Central Site

The Penn Central Site (also known as the Garvey Grain Elevator) has, like the U.S. Scrap Site, gone through a gradual change over the years that it has been in operation. The elevator was in existence prior to 1938 as noted by a 1938 air photo. A drawing which was made in 1965 indicates that the dimensions of the elevator are approximately 152 ft X 50 ft. An associated boiler plant and smoke stack (for drying the grain) existed just to the southeast of the elevator. Railroad tracks serviced the grain elevator, entering the site from the northwest, and continuing beyond the elevator to the southeast.

Air photos which were taken in 1938, 1949, 1958 and 1967 indicate very few topographic changes occuring on the Penn Central Site during this period. It is presumed that the grain elevator was in operation during this time.

An air photo which was taken in April of 1973 indicates that several tank trucks had been deposited northwest of the site and some surface rubble also appeared in this area.

In the 1975 drawing by Porter (entitled: "Proposed Ditch and Pond Construction"), a note was included in the specifications which indicated that "approximctely one-half mile to the east of the U.S. Scrap property at the Garvey Grain Elevator Site there is the following required work: remove the fill material along the MSD fence for a width of 10 ft, by a length extending 50 ft beyond the east building wall to 50 ft beyond the west building wall, by a depth down to the water table. The material shall be spread to the north of the building and compacted. The basement of the building shall be pum(p)ed of any hexane pollutants (as tested by MSD chemists) which shall be hauled to an approved treatment site."

By 1978, the Garvey Grain Elevator Site had apparently been covered (except for the elevator itself) and leveled because no tankers or other surface debris were noted in the air photo.

Field observations made of the site in August of 1980 indicated that there were small piles of rubble north of the elevator which still existed at that time. These piles of rubble were also observed in May of 1981 which was after the elevator had been demolished.

The grain elevator was demolished by blasting in the fall of 1980. It was reported that much of the debris from the demolition was hauled off the site; however, there was a higher area noted afterwards which was approximately 4 to 6 ft above the grades observed prior to the demolition. This could have been the result of redistributing the surface debris from the demolished elevator, as well as covering it with a soil cap as was observed in May of 1981.

Summary

In summary, various waste disposal activities were apparently performed over the years at both the U.S. Scrap and the Penn Central Sites. Available documentation indicates that these activities began as early as the late 1960's. Many of the disposal activities reportedly concerned liquid waste which was pumped into the basements of the Garvey Grain Elevator and the grain elevator at the U.S. Scrap Site as well as into various ponds constructed on both sites. Reports made by several people indicate that 1) holes were dug in the ground, oily waste was disposed of in the holes and they were covered, 2) underground tanks were used to collect the waste, and 3) actual tanker trucks were buried. We did not find any buried tanks or trucks in our exploration however, and could not therefore confirm any of these observations.

The MSDGC was concerned about the problem in the early 1970's or late 1960's and there were many complaints and inspections made of both sites after that time.

A pit which was noted by Mr. Kenneth Kastman of STS in August of 1980 at the U.S. Scrap Site was approximately 50' X 50' in size and the liquid within it had an oily, dark brown appearance. This could be the same pit which was noted in the 1973 air photo. Mr. Kastman's observations indicated that bubbles could be seen rising to the surface at the north end of this pit. Unverified information exists which indicates that this pit could be as deep as 30 ft.

GEOLOGY AND HYDROGEOLOGY

The potential for movement of contaminants into the ground water system is related to the geologic and hydrologic conditions existing in that particular area. Therefore, we are presenting background information relating to the geology and hydrology of the area in which the sites are located and, to the extent possible, of the subject sites themselves.

Geology (Ref. 1)

The uppermost bedrock unit in Northeastern Illinois is comprised primarily of Silurian Age dolomitic limestone of the Niagaran Series. This bedrock is overlain by as much as 400 ft of glacial drift deposited during the Pleistocene Age by the Lake Michigan lobe of the Wisconsinan glacial advance, the last major episode of glaciation in the Midwest. The glacial sediments were deposited in the forms of hills, moraines, and outwash deposits. Once the glaciers retreated, lacustrine deposits from ancient Lake Chicago, the predecessor of Lake Michigan, accumulated. These glaciolacustrine deposits consisted primarily of silt and silty clay layers containing thin beds of more plastic clay with local lenses of sand along former beach ridges. In addition to the beach ridges, coarse granular material was deposited in spits and bars. It is these more granular deposits through which the uppermost ground water generally flows. In some areas, however, such as at the subject sites, these granular deposits have either been largely removed or they do not exist. In such cases, if fill materials have been placed, the uppermost ground water may flow through them.

The U.S.Scrap and Penn Central Sites are located on the glacial Lake Chicago plain. At these sites, the Niagaran dolomite is overlain by approximately 65 ft of glacial till deposits. The clayey till is in turn overlain by near surface fill materials. These fill materials appear to have been randomly placed and therefore they vary considerably in physical and hydraulic characteristics.

Hydrogeology (Ref. 2)

Regionally, the ground water resources in Northeastern Illinois and Northwestern Indiana are developed in four aquifer systems; 1) the unconsolidated sand and gravel deposits in the glacial soils, 2) the Silurian Dolomite aquifer underlying the unconsolidated deposits, 3) the Cambrian-Ordovician aquifer located in the deeper sandstones and 4) the Mt. Simon aquifer in the deepest formations of the Cambrian Age. It is possible that the unconsolidated sand and gravel aquifer and the Silurian Dolomite aquifer are, in some areas, hydrologically interconnected, but they are usually separated from the underlying Cambrian-Ordovician and Mt. Simon aquifers by the Maquoketa Shale formation. The Maquoketa Shale is a relatively impervious, clayey, formation and acts as an aquitard or even an aquiclude in the Northeastern Illinois area.

It can be seen, therefore, that the upper aquifers (unconsolidated glacial deposits and Silurian Dolomite) are of primary concern with regard to contamination by surface and/or near surface sources. Should contamination occur, it will probably be relegated to these aquifers beause its downward movement into the underlying Cambrian-Ordovician and Mt. Simon aquifers will be virtually prevented by the Maquoketa Shale. Studies conducted in 1957 indicated that approximately 60% of the ground water which was used in the Chicago area (at that time) came from the sand and gravel and Silurian Dolomite aquifers.

FIELD EXPLORATION PROGRAM

Our subsurface exploration programs at the subject sites consisted of performing several operations to establish subsurface soil and ground water conditions. These operations included drilling soil borings, installing ground water monitoring wells, excavating test pits, and performing a geophysical survey.

Soil Borings

Eight soil borings (G-101 through G-106, G-132 and G-133) were performed by STS at the locations shown on Figures 1, 2 and 3. All of the borings were extended into the clay material which was encountered below the surface fill. One boring (G-105) was extended through the clay and into bedrock which was encountered at a depth of approximately 65 ft.

Boring numbers G-101 through G-105, G-132 and G-133 were performed with a truck-mounted rotary drill rig that utilized various cutting bits and drilling fluid to advance the boreholes. This drilling fluid consisted of clean water which was used in all cases except for a small amount of Revert (an organic additive) which was utilized in Boring G-105 at a depth of 66 ft due to excessive cave-in of the weathered bedrock or gravel/boulder mix that was encountered at that depth. It should be noted that 10 ft of steel surface casing (4 inches in diameter) was necessary in each of these boreholes to maintain an open hole in the upper section which was within the fill zone.

Boring number G-106 was performed with a truck mounted auger drilling rig which utilized continuous flight augers to advance the boreholes. No surface casing or drilling fluid was required to maintain an open borehole.

Representative soil samples were obtained by means of the split-barrel and shelby tube sampling procedures in general conformance with ASTM Specifications D-1586 and D-1587, respectively. In the split-barrel sampling procedure, a 2 inch O.D. split-barrel sampler is driven into the soil a distance of 18 inches by means of a 140 lb hammer falling 30 inches. The Standard Penetration Resistance Value is the number of blows per foot of penetration for the final 12 inches of driving. This value can be used to provide a qualitative indication of the in-place relative density of cohesionless soils. This indication is qualitative since many factors can significantly affect the Standard Penetration Resistance Value and prevent direct correlation of results obtained by drill crews using different drill rigs, drilling procedures, and hammer-rod-spoon assemblies. In the shelby tube sampling procedure, thin-walled, steel seamless tubes with sharp cutting edges are pushed hydraulically into the generally cohesive soils and relatively undisturbed samples are obtained.

A field log of the soils encountered in each of the borings was maintained by the drill crew and by the STS on-site geologist (Mr. John Crowley). All soil samples obtained from the drilling operations were sealed immediately in the field and brought to our laboratory for further examination and testing. The drill crew and geologist maintained regular contact with the office engineering personnel so that proper evaluation of the soil conditions and appropriate drilling procedures could be maintained throughout the field exploration program.

Ground Water Monitoring Wells

In order to characterize the local ground water system, STS installed 2 inch diameter PVC monitoring wells at each boring location. As-built monitoring well construction details are shown on the drawings which are included in Appendix B.

Briefly, each of the monitoring wells consisted of either a 5 ft or 10 ft section of 2 inch PVC slotted well screen with a No. 10 slot (slot size = 0.010 inches). The screens were each placed at the depths shown on the individual well diagrams. Surrounding the screens, gravel filter material was placed in order to allow ground water to enter the screen area. Above the filter, a bentonite pellet seal was installed in order to minimize downward migration of surface water into the slotted screen sections.

All of the wells except G-105 were installed at depths commensurate with the surface fill/clay interface. Monitoring well G-105, however, was installed to a depth of 69.7 ft in order to determine if the water in the bedrock aquifer was hydraulically connected to the water in the upper fill. The bentonite seal was placed at a depth and in a manner so as to preclude, as much as possible, downward migration of surface water and ground water from the upper fill into the screened interval. In addition, steel casing was advanced through the near-surface fill material to minimize seepage (and subsequent cross-contamination) of the upper ground water into that contained in the bedrock aquifer.

The soil borings and the ground water monitoring wells were installed between June 22, 1981 and June 26, 1981.

Test Pits

On June 29, 1981, nine test pits were excavated at the locations shown on Figures 2 and 3. The purpose of these test pits was to, in an expedient and cost effective manner, establish the depth and character of the various fill areas on the two sites. The test pits were excavated utilizing a backhoe which was rented from The Edward Gray Corporation, 12233 Avenue O, Chicago, Illinois 60633. The backhoe operations were observed by STS Geologist Mr. John Crowley. The results of the test pit excavations are indicated on the test pit logs which are enclosed in Appendix C.

Geophysical Survey

Geophysical exploration methods are often used to provide continuous, qualitative data on subsurface characteristics. In these methods, areas of buried waste and zones of variable soil conditions ('anomalies') occur which identify the zone boundaries. On this project, ground probing radar and magnetometer surveys were proposed because of their general ability to detect such anomalies.

A ground probing radar system involves generating an electromagnetic pulse at the ground surface. Reflections of this pulse from surface and subsurface interfaces indicate travel times which can then be used to calculate the depths of the reflecting interface(s).

The penetration depth of the ground probing radar is generally dependent upon the wave attenuation characteristics of the near surface soils. This attenuation is related to the effective resistivity of the earth material being probed. Generally, the radar penetration depth is reduced by low resistivity subsurface materials (such as clay), whereas higher resistance materials (such as sand) allow for much greater depth of penetration. Resistivity surveys at both sites were therefore performed in order to evaluate the feasibility of utilizing ground probing radar.

The magnetometer is an instrument which measures magnetic anomalies caused by variations in substrata. The normal magnetic field at any point on the earth's surface has a specific geomagnetic inclination and intensity. In the Chicago area, this inclination is approximately 74^{o} N with a total intensity of approximately 57,000 gammas. Variations in conditions below the earth's surface can cause anomalies in both the geomagnetic intensity and inclination, which can be measured using magnetometer instruments. These anomalies can be caused by iron objects, deposits of metallic refuse, and certain rocks and soil containing sufficient amounts of metallic minerals.

Magnetometer surveys were performed at both sites on pre-determined grids and the continuous readings of the magnetometer instrument were recorded at specified distance intervals.

Data from the geophysical survey is included in Appendix D.

LABORATORY TESTING PROGRAM

An extensive laboratory testing program was performed consisting of 1) physical analyses to accurately classify the fill and soil samples obtained in the borings and 2) chemical analyses to determine the concentrations of various chemicals in the ground water, soil, and near surface fill materials.

Physical tests of the fill and soil samples were performed by STS in its Northbrook, Illinois laboratory. The chemical testing was performed by the Illinois EPA. The results of the chemical tests are indicated on Tables 2 through 6.

Physical Analyses

All of the samples obtained from the boring operations were visually classified in accordance with the Unified Soil Classification System. The symbols according to this system of classification are shown in parentheses following the descriptions on the boring logs. It should be noted that much of the material encountered in the soil borings consists of non-soil fill materials which are described on the boring logs in as thorough manner as possible.

Most of the soil samples obtained in the split-barrel and shelby tube samplers were subjected to water content tests and the clay samples were subjected to hand penetrometer tests as well. In the hand penetrometer test, the unconfined compressive strength of a cohesive soil is estimated, to a maximum value of 7 tons per square foot

(tsf), by measuring the resistance of the sample to a small, spring-calibrated plunger. Unit dry weight tests were also performed on several of the soil samples.

Four samples of silty clay obtained in the shelby tube samplers were chosen for permeability tests. These samples were considered to be representative of the silty clay strata separating the surface fill materials from the underlying bedrock. The vertical permeability (also known as the vertical hydraulic conductivity) determined from these tests is considered to be the ability of the soil (clay) to transmit water (or leachate) from higher to lower elevations.

The results of all the tests performed by the STS laboratory are indicated on the enclosed boring logs, test pit logs, and permeability summary sheets (Appendices A, C and E, respectively).

Chemical Analyses

In addition to the physical tests described above, chemical analyses were performed by the Illinois EPA on:

1. Ground water samples obtained from the monitoring wells in June of 1981 (Tables 2 and 3).

2. Ground water samples obtained from the monitoring wells in October of 1981 (Tables 2 and 3).

3. Soil samples obtained from the borings (Table 4).

4. Samples of surface solid and liquid materials (Table 5).

5. Solid and liquid samples obtained from the test pit excavations (Table 6).

All of these samples were subjected to tests to determine concentrations of various inorganic and organic chemical consitutents as shown on the tables.

SUBSURFACE CONDITIONS

This section of the report describes the fill and underlying soil and bedrock conditions that were noted in the soil borings and test pits. It should be reiterated that soil borings G-101 through G-105 were performed at the U.S. Scrap Site, as were test pits TP-1 through TP-4 and TP-9. Boring G-106 was performed approximately 1500 ft west of the U.S.Scrap Site. Borings G-132 and G-133 as well as test pits TP-5 through TP-8 were performed at the Penn Central Site. The specific fill and soil conditions are indicated on the individual boring and test pit logs (Appendices A and C).

Fill Conditions

U.S. Scrap Site

The fill conditions noted in the borings which were performed at the U.S. Scrap Site indicated materials which differed substantially from one boring to another. In Boring G-101, silty clay fill was encountered from the ground surface at elevation +15.7 CCD to a depth of 2 ft (+13.7 CCD). This silty clay fill contained traces of sand, gravel and roots and was brown, gray and black in color. Below the silty clay fill, Boring G-101 encountered tar-like material which extended from a depth of 2 ft to a depth of 14.0 ft (+1.7 CCD). This material was generally observed to be black with some rusty brown coloration from 9 to 14 ft. The material was saturated (based on field observation)

throughout its depth and contained wood fragments from 2 to 7 ft and cinders and gravel from 9 to 14 ft. A strong organic odor was noted in the material from 2 to 7 ft. A strong turpentine-type odor was noted from 7 to 9 ft.

Boring G-102 encountered clayey topsoil from ground surface (+18.2 CCD) to a depth of 1.5 ft (+16.7 CCD). This topsoil material was organic and contained traces of sand and roots. It was dark brown in color. Below the clayey topsoil, Boring G-102 encountered paint sludge to a depth of 4 ft (+14.2 CCD). Below the paint sludge, black sand and cinder fill material was encountered to a depth of 5.5 ft (+12.7 CCD).

Boring G-103 encountered miscellaneous fill materials from ground surface (+13.7 CCD) to a depth of 1.5 ft (+12.2 CCD). These materials were dark brown and light brown in color and emitted no noticeable odor. Gray, gravelly fill with wood fragments was encountered from 1.5 ft to a depth of 5 ft (+8.7 CCD). From this depth to a depth of 10 ft (+3.7 CCD) granular fill (which was saturated with a fluid having a strong organic odor) was encountered. This fill was black in color and was very dense to extremely dense in consistency.

Boring G-104 encountered clayey topsoil with traces of wood, slag and paint residue from ground surface (+15.7 CCD) to a depth of 0.5 ft (+15.2 CCD). This topsoil material had a paint-like odor. Below this material, sandy and gravelly fill material was encountered to a depth of 1 ft from ground surface (+14.7 CCD). This material also had a strong paint-

like odor and had a pH of between 8 and 9 as measured in the field using pH paper. From 1 ft to a depth of 2 ft (+13.7 CCD), tar-like material was encountered which contained traces of gravel, wood, and bricks. Again, this material had a strong paint-like odor. Beneath the tar-like material, black and gray sandy and gravelly fill material was encountered which extended to a depth of 4.5 ft (+11.2 CCD). This material contained traces of bricks and wood, was very dense in consistency, had a strong paint-like odor, and had a pH of between 9 and 10 as measured in the field using pH paper. From 4.5 ft to a depth of 9 ft (+6.7 CCD) sandy, tar-like fill material was encountered. This material was black and gray, medium dense, and was observed to be saturated at a depth of 6 ft from ground surface. The tar-like material had a strong turpentine-like odor.

Boring G-105 encountered black, very dense cinder fill material from ground surface (+15.2 CCD) to a depth of 2 ft (+13.2 CCD). This material had a strong paint-like odor. From a depth of 2 ft to a depth of 7 ft (+8.2 CCD) red and black brick fill was encountered which contained little clayey topsoil. The material had a strong paint-like odor.

Test pit TP-1 encountered miscellaneous fill materials consisting primarily of wood, metal, sand, silt, large concrete blocks and metal containers from the ground surface to a depth of 8 ft. This fill material exhibited a strong chemical odor.

Test pit TP-2 encountered miscellaneous fill materials consisting primarily of wood, metal, sand, silt, large concrete blocks and metal containers from the ground surface to a depth of 9 ft. It should be noted that an oily liquid substance was encountered at 6 ft in depth and that the entire test pit exuded a strong chemical odor.

Test pit TP-3 encountered cinder and slag fill from ground surface to a depth of 1.5 ft. This material was black, loose and saturated. From 1.5 ft to 3 ft in depth, an oily, saturated material was encountered. At 3 ft the test pit encountered hard white slag and terminated at this depth.

Test pit TP-4 encountered miscellaneous fill materials consisting of sand, gravel, concrete and wood which were saturated at a depth of 3.5 ft. This layer extended from ground surface to a depth of 4 ft. At 4 ft, brown and black silty clay was encountered. The test pit ended at this depth.

Test pit TP-9 encountered miscellaneous fill material consisting primarily of wood, concrete, steel drums, metal, etc. from ground surface to a depth of 7 ft at which point the test pit was terminated.

Background Soil Boring G-106

The only fill material which was encountered in Boring G-106 was from ground surface (+9.9 CCD) to a depth of 1 ft. This fill material was comprised of black silt and cinders and was loose in consistency.

Penn Central Site

Boring G-132 at the Penn Central Site encountered sandy and gravelly crushed stone fill from ground surface (+19.8 CCD) to a depth of 6 ft (+13.8 CCD). This material was light gray and was medium dense to very dense. From 6 ft to a depth of 7 ft (+12.8 CCD), wood was encountered and no sample could be recovered. From 7 ft to a depth of 9 ft (+10.8 CCD), black and gray clay fill was encountered which contained traces of gravel, sand and wood. This material was very stiff and had a very stong paint-like odor. From 9 ft to a depth of 12 ft (+7.8 CCD), black oily cinders were encountered which were in a medium dense condition. These materials appeared to be saturated with oil or a similar liquid. From 12 ft to a depth of 13.5 ft (+6.3 CCD), black silty organic clay was encountered which was stiff to very stiff.

Boring G-133 encountered clayey topsoil from ground surface at +17.4 CCD to a depth of 2 ft (+15.4 CCD). This material was dark brown and contained little wood and trace roots. From 2 ft to a depth of 7.5 ft (+9.9 CCD), saturated wood fragments were encountered. These wood fragments were noted to be black in color. From 7.5 ft to 9.5 ft (+7.9 CCD), saturated gravel fill was encountered. This material was light gray and extremely dense. From 9.5 ft to 12 ft (+5.4 CCD) sandy clay fill (slightly tar-like) was encountered. This material was black and contained traces of wood, gravel and roots. It was very stiff and was noted to have a paint-like odor.

Test pit TP-5 at the Penn Central Site encountered silty topsoil and brick fill extending from ground surface to a depth of 1 ft. Below this material, and extending to a depth of 2 ft, the test pit encountered wood which appeared to be saturated with black colored fluid. The test pit was terminated at a depth of 2 ft.

Test pit TP-6 encountered extremely dense concrete rubble fill from ground surface to a depth of 4 ft at which point the test pit was terminated.

Test pit TP-7 encountered miscellaneous fill consisting of wood and concrete from ground surface to a depth of 3 ft at which point the test pit was terminated.

Test pit TP-8 encountered miscellaneous fill materials consisting primarily of concrete, rebar, metal and silty clay from ground surface to a depth of 9 ft at which point the test pit was terminated.

Soil Conditions

U.S. Scrap Site

Boring G-101 encountered silty clay at a depth of 14 ft (+1.7 CCD). This material was gray and very stiff. The boring terminated at a depth of 17 ft.

Boring G-102 encountered light brown silty clay from a depth of 5.5 ft (+12.7 CCD) to a depth of 7 ft (+11.2 CCD). This material was stiff and had traces of gravel and sand. From 7 ft to a depth of 12.5 ft (+5.7 CCD), brown and gray silty clay was encountered. This material had traces of gravel, sand and shale and was noted to be very stiff to hard. From 12.5 ft to a depth of 15 ft (+3.2 CCD) hard gray silty clay was encountered. The boring terminated at 15 ft.

Boring G-103 encountered natural silty clay at a depth of 10 ft (+3.7 CCD). This material was brown and gray, very stiff and contained traces of gravel, sand and shale. The layer was noted to have a strong chemical odor and extended to a depth of 17 ft (-3.3 CCD). From 17 ft to a depth of 19.5 ft (-5.8 CCD) brown and partly gray, hard silty clay was encountered. This clay exhibited slightly higher plasticity than most of the other clay samples obtained in the program. From 19.5 ft to a depth of 22 ft (-8.3 CCD), Boring G-103 encountered very stiff, silty clay. This boring terminated at a depth of 22 ft.

Boring G-104 encountered natural silty clay at a depth of 9 ft (+6.7 CCD). This silty clay contained traces of gravel and sand, was brown and gray and was very stiff. It exhibited a slight paint-like odor and extended to a depth of 13 ft (+2.7 CCD). At 13 ft, gray, very stiff silty clay was encountered which then extended to a depth of 17 ft (-1.3 CCD). The boring terminated at a depth of 17 ft.

Boring G-105 encountered natural clay at a depth of 7 ft (+8.2 CCD). This material was sandy in nature and contained little silt. Its color was brown and gray and it was noted to be stiff in consistency. It was also noted to have a moderate paint-like odor. The sandy clay extended to a depth of 14 ft (+1.2 CCD) at which point brown and gray, hard silty clay was encountered. This material extended to a depth of 18 ft (-2.8 CCD). From 18 ft to 31 ft (-15.8 CCD), Boring G-105 encountered gray, very stiff silty clay containing traces of gravel, sand and shale. At 31 ft, hard gray silty clay was encountered which contained little sand and traces of gravel and shale. This material extended to a depth of 59.5 ft (-44.3 CCD). At this depth, gray clayey silt was encountered. This silt was extremely dense and contained traces of gravel, sand and shale. The silt was noted to be in a moist condition and extended to a depth of approximately 66 ft (-50.8 CCD) whereupon broken bedrock and/or boulders were encountered. These materials continued to a depth of 68 ft (-52.8 CCD) at which point dolomitic bedrock was encountered. The boring terminated at this depth.

Background Soil Boring G-106

Boring G-106 encountered natural soil materials at a depth of 1 ft (+8.9 CCD) from ground surface. These materials consisted of medium to coarse, rust colored sand which extended from a depth of 1 ft to a depth of 1.5 ft (+8.4 CCD). From 1.5 ft to a depth of 3 ft (+6.9 CCD) brown, gray and black silty clay was encountered which contained little topsoil. The rust colored medium to coarse sand was again encountered from a depth of

3 ft to a depth of 3.5 ft (+6.4 CCD). From 3.5 ft to a depth of 8 ft (+1.9 CCD), brown and gray, stiff to very stiff silty clay was encountered. This material was noted to contain traces of gravel, sand and shale. At 8 ft, gray silty clay was encountered which was very stiff in consistency and contained traces of gravel, sand and shale and continued to a depth of 14.5 ft (-4.6 CCD), at which point the boring was terminated.

Penn Central Site

Boring G-132 at the Penn Central Site encountered natural silty clay at a depth of 13.5 ft (+6.3 CCD). This clay was brown and gray, very stiff and contained traces of gravel, sand and shale. It should be noted that there was a layer of black, silty organic clay above the aforementioned clay which was encountered from a depth of 12 ft (+7.8 CCD) to a depth of 13.5 ft (+6.3 CCD). The clay which was encountered at 13.5 ft extended to a depth of 19.5 ft (+0.3 CCD). At this level, hard, gray silty clay was encountered which extended to a depth of 25 ft (-5.2 CCD). The boring terminated at this depth.

Boring G-133 encountered natural clay at a depth of 12 ft (+5.4 CCD). This clay was silty and contained traces of gravel, sand and shale, it was noted to be brown, gray and black, and was stiff to very stiff. A paint-like odor was noted in the material which extended to a depth of 14 ft (+3.4 CCD). From 14 ft to a depth of 17 ft (+0.4 CCD) grayish brown, stiff silty clay was encountered which contained traces of gravel, sand and shale; this material had a slight paint-like odor. From 17 ft to 19 ft (-1.6 CCD) grayish brown, very stiff to hard silty clay was encountered. From 19 ft to 25 ft (-7.6 CCD), brownish gray, very stiff to hard, silty clay was encountered. The boring terminated at 25 ft.

GEOPHYSICAL SURVEY RESULTS

The resistivity survey indicated that soils in the upper 15 to 30 ft of the Penn Central Site had resistivities varying from 5 umhos/ft to 400 umhos/ft (generally typical of silty and clayey soils). Upon evaluation of this information, it was determined that ground probing radar would be ineffective for determining the location and/or depth of subsurface discontinuities or buried materials. The resistivity data obtained at this site is summarized in Appendix D.

In addition to the resistivity survey, a magnetometer survey was performed on June 29, 1981. This survey consisted of five traverses of the site, obtaining readings every 2 to 3 ft along the traverse length of 400 ft. The survey indicated that a magnetic anomaly occurred within the area of the razed loading shed and grain elevator at the Penn Central Site. Data from this survey is also included in Appendix D.

The areas of major magnetic anomalies at the Penn Central Site occurred between Station 1+50N and Station 3+00N and between Station 1+00W and Station 1+33W. Subsequent test pit excavations indicated the presence of rubble fill, consisting of reinforcing rods, electrical conduit, and other metallic debris within a clay matrix. The test pits at the Penn Central site were excavated to a maximum depth of 8.0 ft (due to digging difficulty).

At the U.S. Scrap Site, four locations were explored using the resistivity survey. At these locations, soil resistivities ranging from 30 umhos/ft to 440 uhmos/ft (typical of silty and clayey soils) were calculated. It was again determined that ground probing radar would not be feasible at this site. The results of the resistivity survey are again summarized in Appendix D.

On June 29, 1981, a magnetometer survey was performed at the U.S. Scrap Site. It consisted of two traverses, one approximately 1,100 ft in length and a second approximately 900 ft in length. Magnetic anomalies along these traverses were minor and were likely related to previous industrial activities. They occurred primarily where the traverses extended across the mound of rubble fill and refuse near the north end of the site. Test pits performed in this area indicated that metallic and nonmetallic fill, including scrap metal, broken concrete, wood and soil, occurred throughout the rubble area.

GROUND WATER LEVELS

Ground water levels were observed during and after drilling and at the times that samples were obtained by the Illinois EPA for chemical analysis. The observations made by the STS drill crew are noted on the individual boring and test pit logs and the observations made by the Illinois EPA are indicated on Table 1 (next page).

U.S. Scrap Site

The data obtained from observations in wells G-101 to G-104 indicate that the uppermost water level at the U.S. Scrap Site appears to be perched within the near-surface fill material. Generally, ground water was encountered between +7 CCD and +15.5 CCD in these wells. It should be noted that the water levels which were observed by the Illinois EPA during the first sampling operation in June of 1981 were consistently 1.5 ft to 3.4 ft higher than those that were noted during sampling operations of October, 1981. This can probably be attributed to the fact that June is traditionally a wetter time of the year than October, causing higher water levels in the perched aquifer. These elevation fluctuations can have a significant impact on the uppermost ground water quality since many differences in fill type were noted with depth at the different well locations.

TABLE 1

Ground Water Levels in the Monitoring Wells
As Noted By the Illinois EPA While Sampling

579.9'?

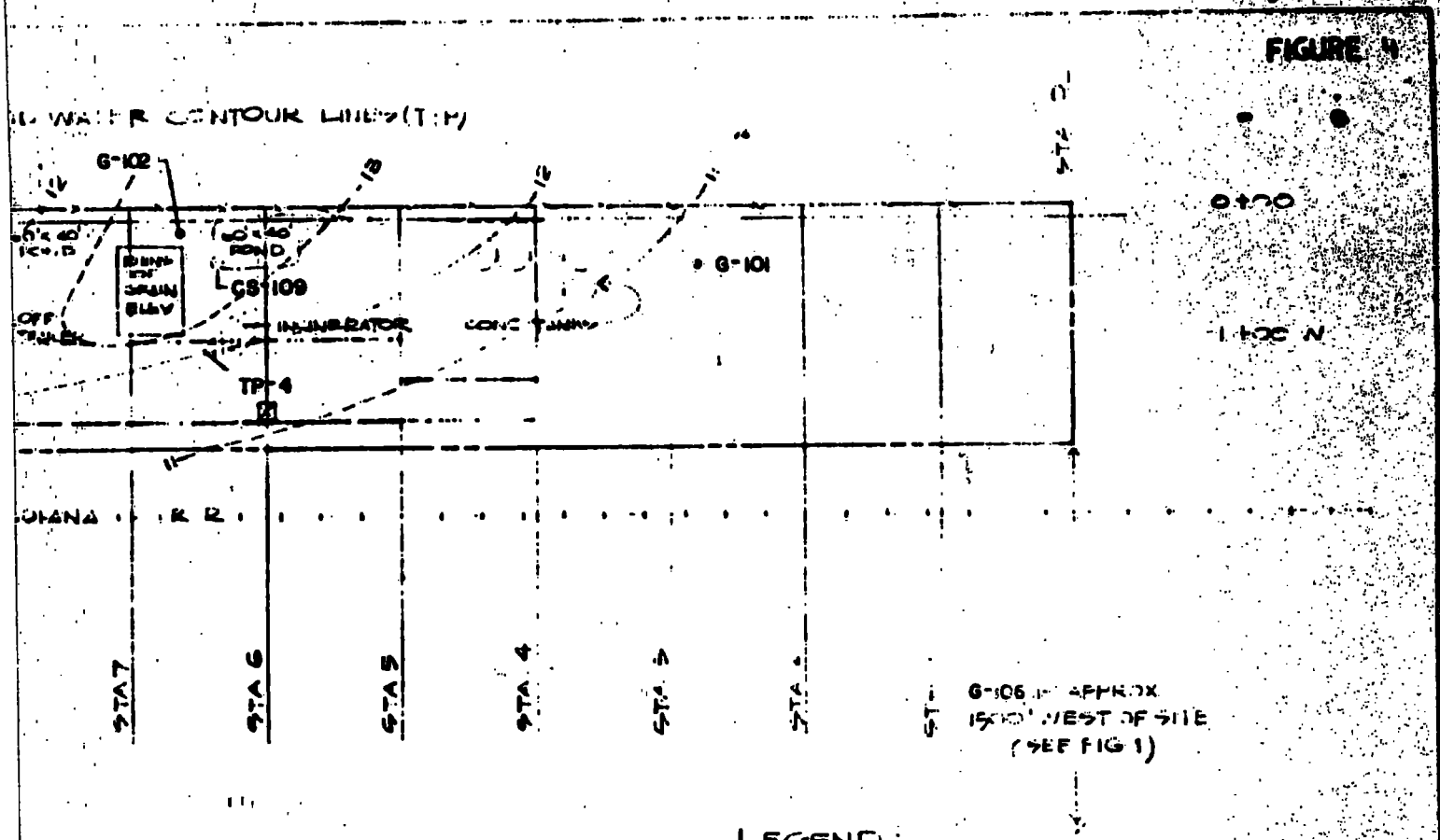
Well Number	Site	Elevations (CCD) Top of Casing	Ground Surface	Water Levels June, 1981	October, 1981
G-101	U.S. Scrap	16.8	15.7	12.8	10.6
G-102		18.5	18.2	15.5	13.8
G-103		14.2	13.7	10.4	7.0
G-104		16.7	15.7	13.0	11.5
G-105		16.1	15.2	-13.1	-16.1
G-106	Background Well	11.0	9.9	----	8.1
G-132	Penn Central	20.4	19.8	17.7	15.9
G-133		18.0	17.4	15.3	8.2

At both sampling times (in June and October), the water level readings indicated that Well G-102 was in the area of highest water level. The water level then sloped downward toward G-101, G-103 and G-104. It is hypothesized that there is a ground water mound which has formed within the fill in the vicinity of Well G-102 (this is also in the vicinity of the surface water lagoons). Ground water appears to be flowing radially downward away from this mound, based upon the information which we have available. A diagram of ground water conditions and flow lines which depict this mounded condition is shown on Figure 4.

Concerning the water levels in Well G-105, it should be remembered that this well(screen) is sealed within the bedrock, and water level readings made in the well will not be representative of water levels in the upper fill material. Water level readings made in G-105 indicated that the water which was contained within the bedrock at the time the readings were made generally had a piezometric level of between -13.1 CCD and -16.1 CCD. Since the piezometric level of the water in the bedrock is generally about 25 ft lower than that which is within the fill, there will be a tendency for downward vertical flow of the water in the fill toward the bedrock aquifer. Our permeability tests on the clay which underlies the fill, however, indicate that it (the clay) has a very low vertical permeability (on the order of 10^{-8} cm/sec) and that downward flow through the clay mass will probably be very slow.

Ground water observations in Well G-106 indicated a water level at approximate elevation +8 CCD.

FIGURE 4



GROUND WATER CONTOUR MAP
U. S. SCRAP SITE
CHICAGO ILLINOIS

by : SOIL TESTING SERVICES, Inc.

REV. 4-8-1982 by MGS

APPR MFS 6-3-1981 STS Job No 22063

REVISED 3-23-1982 by MGS

Penn Central Site

Water levels which were observed during the sampling operations in June of 1981 by the Illinois EPA indicated that the water level at the Penn Central Site was between elevation +17.7 CCD in Well G-132 and +15.3 CCD in Well G-133. In the October 1981 sampling operations, the water levels were noted to be +15.9 CCD in G-132 and +8.2 CCD in G-133. We feel that the significant drop in the water level at G-133 can be attributed to the fact that, again, October is a drier time of the year than June and the water level in G-133 dropped and dissipated into the gravel fill layer that was noted to exist between +7.9 CCD and +9.9 CCD.

While there is not enough data at the Penn Central Site to discern the direction of ground water flow, one would generally conclude that the regional flow would be somewhat in the direction of Lake Calumet (and hence, Lake Michigan). There could be localized differences, however, depending upon topography, recharge and discharge areas, and subsurface fill conditions. Since the ground water level at the Penn Central Site is at or above the water level at the U.S. Scrap Site, we do not expect that there is direct flow from the U.S. Scrap Site to the Penn Central Site.

CHEMICAL ANALYSES

In conjunction with this contamination survey, the Illinois EPA obtained soil, water, and other liquid and solid samples from the U.S. Scrap and Penn Central Sites at various times for chemical analyses. The results of these analyses are indicated on Tables 2 through 6. The types of samples obtained, the table on which the analytical results are shown, and the month and year in which the samples were obtained are indicated below:

Type of Sample	Table No(s).	Month/Year Sample Obtained
Ground water samples from wells	2, 3	June, 1981
Ground water samples from wells	2, 3	October, 1981
Soil samples from borings	4	June, 1981
Samples of surface solid & liquid materials	5	June, 1981
Samples from test pit excavations	6	June, 1981

In order to aid in evaluating the analyses performed on ground and surface water samples, the Illinois Attorney General's Office has tabulated the standards set forth in the Illinois Pollution Control Board Chapter 3: Water Pollution Regulations. These standards are shown on Table 7. This table was transmitted to STS by the Illinois Attorney General's Office on January 4, 1982, and was the basis for evaluating results for most of the inorganic parameters analyzed.

Quantitative standards for all of the chemicals analyzed have not yet been established (i.e. specific limits have not been established for most of the organic parameters measured during this project). Some guidelines are available through Water Quality Criteria documents developed by the US Environmental Protection Agency. However, these are guidelines only, rather than binding standards.

Similarly, specific concentration limits have not been developed for contaminated soils. These samples as well as the selected waste material samples collected during this project are more likely to be evaluated using criteria established under the Resource Conservation and Recovery Act (RCRA) (Ref.3). RCRA identifies as hazardous a variety of materials which either exhibit hazardous characteristics (defined by RCRA as corrosivity, ignitability, reactivity or toxicity) or which contain measurable concentrations of specified hazardous compounds.

Therefore, the evaluation of results obtained in this study is both objective and subjective. When considering organic constituents, it must be recognized that most of the contaminants analyzed are not naturally occurring at the levels measured. Secondly, analytical techniques for these chemicals are very accurate, often to the parts per billion level. Concentrations which are presented in the parts per million range indicate that significant amounts of these chemicals are present.

TABLE 2

Chemical Analyses*
Ground Water Monitoring Wells

U.S. Scrap Site

Well No.	G-101		G-102		G-103		G-104		G-105		G-106	
Chemical Constituent (ppm) / Date Sample Obtained	9/23/81	10/27/81	9/28/81	10/27/81	9/28/81	10/27/81	9/24/81	10/27/81	9/24/81	10/27/81	10/27/81	[illegible]
Alkanes/cycloparaffins	1.90	10.00			1.30	34.00			22.00	2.70		
Styrene - 2 - D		0.18										
[illegible]-benzenes	1.00	6.80		3.30	0.38	12.00						
[illegible]-benzenes	1.30	3.90		0.92	0.70	81.00						
[illegible]-benzenes						17.30						
[illegible] -Dihydro-4-Methylindene						3.20						
Dimethylnaphthalene		0.66				0.51						
Ethylbenzene					0.48	30.00						
Ethylmethylbenzene			0.64									
Ethylphenol		2.10				7.10		3.80				
Fatty Acid Methylester			0.29									
Isophorone					0.40	28.00			2.20			
Methylbiphenyl		0.23										
Methylhexanol							0.96					
Methylnaphthalene		0.57		0.17								
Methylphenol		6.30						11.00			6.30	
4-Methyl-2-Nitrophenol						3.70						
4-Methyl-2-Pentanol							22.00					
4-Methyl-2-Pentanone	5.10	3.30					22.20					
Naphthalene	0.56	1.90		0.81	0.23	6.70		0.45	1.30	0.55		
Nitrophenol						3.20						
PCB's		0.029		0.022		1.20		0.044		0.12	0.0056	
Phenol		11.00				9.00		4.30			9.80	
Toluene	4.80	12.00			1.30	46.00	57.20	32.00	26.00	7.70		
Trichloroethene		0.66				4.30						
Trimethylcyclohexanol	5.20		2.00	1.40			1.30	6.60				
Trimethylcyclohexanone	4.90	7.20	6.30	12.00		5.70	9.70	21.00				
Trimethylnaphthalene		0.38										
Trimethyl-3-cyclohexene-1-Methanol Acetate							1.90					
Xylenes	10.00	22.00	14.00	27.00	0.47	120.00	24.00	22.00	47.00	11.00		
Alkalinity	1,300	1,130	1,080	2,740	2,800	3,680	3,200	2,800	320	640	NT	NT
Ammonia	82.0	88.0	20.0	82.0	32.0	28.0	80.0	94.0	0.43	1.3	3.91	1.5
Arsenic	0.08	0.018	0.004	0.05	0.18	0.12	0.019	0.13	0.009	0.09	0.02	0.0
Barium	0.3	2.3	0.2	INT	INT	INT	INT	INT	0.	INT	INT	1.0
BOD-5	>2,266	>2,192	NT	189	NT	>2,147	NT	>2,167	NT	371	NT	30.0
Boron	1.2	1.8	1.7	4.1	16.3	12.0	4.4	5.4	1.5	2.9	NT	1.0
Cadmium	0.00	0.01	0.00	0.00	1.2	1.3	3.30	0.00	0.00	0.01	0.01	0.01
Calcium	276	225	270	612	1,389	1,302	1,189	1,319	121	1,186	NT	
COD	2,820	4,000	836	1,670	149,500	34,000	27,300	20,000	860	2,360	1,780	NE
Chloride	880	800	160	440	830	660	850	940	29	38	NT	250
Chromium (Cr tot.)	0.01	0.09	0.01	0.32	0.29	0.30	0.06	0.32	0.01	0.12	0.13	0.06
Chromium (Cr + 6)	0.00	0.00	0.00	0.00	CI	INT	CI	INT	0.00	0.00	NT	0.05
Copper	0.02	0.46	0.00	0.04	0.06	0.79	0.01	0.36	0.16	0.26	0.51	0.03
Cyanide	NT	0.02	NT	0.31	NT	NT	NT	0.17	NT	0.00	NT	0.02
Fluoride	7.0	6.8	1.4	1.3	2.7	2.1	0.9	0.9	0.8	0.8	NT	1.4
Hardness	1,400	1,000	1,400	2,300	5,400	5,800	5,700	7,600	280	420	NT	NE
Iron	2.0	85.9	0.4	97.9	227.5	250.8	420.4	563.4	10.0	178.	193.4	1.0
Lead	0.00	1.87	0.30	0.58	0.16	0.08	0.00	0.42	0.00	0.37	0.38	0.06
Magnesium	136	186	198	500	1,328	888	797	934	38.8	867	416	NE
Manganese	0.93	1.20	0.94	1.87	27.6	30.6	13.46	18.7	0.23	6.86	4.78	0.15
Mercury	0.0000	<0.00005	0.0000	<0.00005	0.001	<0.0026	0.0000	0.00000	0.0000	<0.00005	<0.00005	0.00
Nickel	0.2	0.2	0.3	0.9	1.9	2.2	2.3	3.3	0.0	0.2	0.1	1.3
Nitrate-Nitrite	0.1	0.1	0.2	0.0	42.0	28.0	0.3	0.1	0.1	0.1	0.2	
pH (units)	8.2	8.2	7.6	7.2	6.1	6.2	6.2	6.1	7.3	7.4	NT	6.5
Phenolics	65.0	84.0	0.380	0.860	122.5	120.0	88.75	62.0	0.270	0.280	0.095	
Phosphorus	0.16	2.8	0.18	2.0	1.1	0.2	0.22	4.4	0.32	0.7	NT	0.05
Potassium	124.0	153.0	42.3	119	1,475	162	181.3	178	9.2	19.0	12.7	NE
S.U.E. ($18C^{\circ}$)	4,000	4,150	2,130	3,650	2,580	13,600	13,400	15,500	786	800	NT	500
Selenium	0.007	0.014	0.003	0.008	0.002	0.25	0.027	0.13	0.002	0.01	0.001	0.01
Silver	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sodium	618	717	152	382	492	486	613	702	81.3	137	NT	NE
Specific Conductance (umhos/cm)	4,346	4,678	2,221	4,901	6,937	8,494	7689	10,[illegible]33	629	[illegible],133	NT	NE
Sulfate	280	65	290	33	1,330	1,040	280	1,240	30	59	NT	250
Zinc	0.2	5.1	0.1	1.7	122	123	0.2	11.1	0.4	5.2	2.5	[illegible]

*Analyses performed by the Illinois Environmental Protection Agency.

**As submitted to STS by the Illinois Attorney General's Office on January 4, 1982.

NT indicates sample not tested for this constituent
INT indicates interference
CI indicates color interference

TABLE 3

Chemical Analyses*
Ground Water Monitoring Wells

Penn Central Site

Chemical Constituent (ppm)	Well No.	G-132		G-133		
	Date Sample Obtained	6/25/81	10/27/81	6/29/81	10/27/81	Limit**
Aliphathydrocarbons		1.60		0.61		
C_3-Benzene			0.42		0.80	
Methylphenal			8.70			
4-Methyl - 2- Pentanone		11.00	11.00			
Napthalene		1.70	0.84			
PCB's			0.0024		0.0046	
Phenol			8.90			
Toluene		20.00	19.00	0.57	0.77	
Trimethylcyclohexanol			0.52	0.45	0.31	
Trimethylcyclohexanone		2.50	1.80	1.30	2.60	
Trimethyl-3-cyclohexene-1-methanol		0.96				
Xylenes		14.00	13.00	0.52	0.72	
Alkalinity		750	3,250	604	1,740	NE
Ammonia		41.0	110.0	20.0	98.0	1.5
Arsenic		0.008	0.07	0.003	0.05	0.05
Barium		INT	INT	INT	INT	1.0
BOD-5		>2,297	>2,167	NT	122	30.0
Boron		2.3	5.7	1.0	2.8	1.0
Cadmium		0.00	0.00	0.00	0.01	0.01
Calcium		467	1,183	290	606	
COD		4,550	11,200	430	1,000	NE
Chloride		320	1,200	220	520	250
Chromium (Cr Tot.)		0.02	0.47	0.00	0.24	0.05
Chromium (Cr + 6)		CI	INT	0.00	0.00	0.05
Copper		0.00	0.12	0.00	0.46	0.02
Cyanide		NT	NT	NT	NT	0.025
Fluoride		2.1	2.3	1.0	2.6	1.4
Hardness		2,500	6,600	1,200	1,200	NE
Iron		62.5	297.9	1.0	81.8	1.0
Lead		0.00	0.57	0.00	0.16	0.05
Magnesium		249	872	96.7	262	NE
Manganese		3.66	6.34	1.06	2.61	0.15
Mercury		0.0000	-0.00013	-0.00007	NT	0.0005
Nickel		1.0	2.3	0.2	0.9	1.0
Nitrate-Nitrite		0.9	0.0	0.2	0.0	
pH (units)		7.9	6.5	7.2	7.3	6.5-9.0
Phenolics		6.700	13.6	0.900	1.28	
Phosphorus		0.33	4.4	0.17	0.89	0.05
Potassium		63.3	160	26.6	246	NE
R.O.E. (180°C)		5,270	10,600	2,160	3,200	500
Selenium		0.013	0.04	-0.002	<0.01	0.01
Silver		0.00	0.00	0.00	0.00	0.005
Sodium		145	435	134	446	NE
Specific Conductance (umhos/cm)		3,570	9,708	2,237	4,633	NE
Sulfate		825	1,080	450	290	50
Zinc		1.2	2.0	0.8	1.1	1.0

* Analyses performed by the Illinois Environmental Protection Agency.

** As submitted to STS by the Illinois Attorney General's Office January 4, 1982.

NT indicates sample not tested for this constituent
INT indicates interference
CI indicates color interference

TABLE 4

Chemical Analyses*
Soil Samples from Borings

Chemical Constituent (ppm)	Sample No.	CS101	CS112	CS111	CS110	CS131	CS133	CS132	CS102	CS103	CS104	CS108	CS117
	Boring No.	G-101	G-102	G-102	G-102	G-103	G-103	G-103	G-104	G-104	G-105	G-105	G-132
	Depth (ft)	7.5-9	2.5-4	4-6	6-7	0-1.2	5-7	10-11	5-7	7.5-9	0-1.5	2.5-4.5	12.5-14.5
Aliphatic Hydrocarbons		150	100	70	120	700	35	56	170	790		2,100	47
C_3-Benzene									390	560		2,600	
C_4-Benzene			57	12	19				95	560		1,900	
C_5-Benzene										55		450	
Napthalene									78	180		710	
Toluene		90							440	1,400		3,100	
Xylenes		360	320	18	39		230	76	2,200	3,300	20	6,800	
Ammonia		2.6	3.2	1.8	1.6				1.2				
Arsenic		<0.001	<0.001	<0.001	0.002				0.008				
Barium		0.1	0.0	0.0	0.0				0.0				
Boron		0.4	0.6	0.3	0.4				0.4				
Cadmium		0.00	0.00	0.00	0.00				0.00				
Chlorides		28	5	8	8				15				
Chromium (Cr tot.)		0.00	0.00	0.00	0.00				0.00				
Copper		0.00	0.00	0.00	0.00				0.03				
Iron		0.2	0.0	0.1	0.2				0.0				
Lead		<0.03	<0.03	<0.03	<0.03				<0.03				
Manganese		0.15	0.04	0.09	0.06				<0.01				
Mercury		<0.05ug/l	<0.05ug/l	<0.05ug/l	<0.05ug/l				<0.05ug/l				
Nickel		0.0	0.0	0.0	0.0				0.0				
pH (units)		7.6	7.9	7.6	7.9				8.4				
Phenols		6,200	0.043	0.068	0.063				0.770				
Phosphorus		0.02	0.02	0.03	0.03				0.03				
Selenium		<0.001	<0.001	<0.001	<0.001				0.003				
Sulfate		33.0	3	4	5				135				
Zinc		0.1	0.1	0.0	0.0				0.0				

*Analyses performed by the Illinois Environmental Protection Agency.

TABLE 5

Chemical Analyses*

Surface Samples **

Chemical Constituent (ppm)	Sample Numbers**				
	CS 109	CS 113	CS 114	CS 115	CS 116
Alkalinity	850				
Ammonia	1.7				
Arsenic	0.007				
Barium	0.2				
BOD-5	417				
Boron	2.0				
Cadmium	0.00				
Calcium	151				
COD	860				
Chloride	120				
Chromium (CR total)	0.04				
Chromium (CR + 6)	0.00				
Copper	0.04				
Cyanide	0.00				
Fluoride	1.7				
Hardness	1000				
Iron	11.3				
Lead	0.12				
Magnesium	182				
Manganese	1.06				
Mercury	0.0000				
Nickel	0.2				
Nitrate-Nitrite	0.0				
pH (units)	8.1				
Phenolics	1.000				
Phosphorus	0.58				
Potassium	41.2				
R.O.E. (180° C)	1440				
Selenium	0.004				
Silver	0.00				
Sodium	57.9				
Specific Conductance(umhos/cm)	1470				
Sulfate	12				
Zinc	0.4				
Aliphatic Hydrocarbons		4,800	130	1,300	21,000
C_3-Benzene		3,800	97		
C_4-Benzene		5,400		270	
Fatty Acid Methylesters		1,100		980	
Fatty Acids		830		2,000	
Isophorone				1,000	
Methylnapthalene		430			
Napthalene		2,200		140	
Phthalic Acid			74		
Stearic Acid			380		
Tetradecanoic Acid	0.51				
Toluene		5,300	280	1,900	5,100
Trimethylcyclohexanal	0.46				
Trimethylcyclohexanone	0.34				
Xylenes		4,000	610	1,500	4,200
Sulfide	57.7				

* Analyses performed by the Illinois Environmental Protection Agency

**Sample CS 109 - Oily residue obtained on ground surface. Light gray with solvent odor.

**Sample CS 113 - Tan, viscous fluid leaking from drum marked: DeSoto Chemical. Drum found near center of site.

**Sample CS 114 - Black, viscous fluid with no detectable odor.

**Sample CS 115 - Black, viscous fluid with solvent odor.

**Sample CS 116 - Black sludge with slight solvent odor.

TABLE 6

Chemical Analyses*
Samples from Test Pit Excavations**

Chemical Constituent (ppm)	Sample Numbers**					
	CS 125	CS 126	CS 127	CS 128	CS 129	CS 130
Aliphatic Hydrocarbons	2,500	124	4.20	2,700		680
C_3-Benzene				220		1,400
C_4-Benzene		11				
Isophorone	190					
Napthalene		8.6				
Phthalic Anhydride					2,900	
Pthalates					1,100	23,000
Styrene				800		
Toluene		84		1,500	520	370
Trimethylcyclohexanol		15				
Trimethylcyclohexanone		38				
Xylenes	180	85	0.63	1,200	88	510

* Analyses performed by the Illinois Environmental Protection Agency
**Sample CS 125 - Test Pit No.2 @ 6' depth (bottom of pit). Brown liquid with solvent odor.
**Sample CS 126 - Test Pit No.3 @ 4' depth (bottom of pit). Brown liquid with solvent odor.
**Sample CS 127 - Test Pit No.4 @ 4' depth - Clear liquid with black solids. Solvent odor.
**Sample CS 128 - Test Pit No.2. Sample from smashed 55-gallon drum found in test pit. Red colored semi-solid material with slight solvent odor.
**Sample CS 129 - Test Pit No.2. Sample from smashed 55-gallon drum found in test pit. Caramel colored semi-solid material with slight solvent odor.
**Sample CS 130 - Test Pit No.9. Sample from smashed 55-gallon drum found in test pit. White colored solid to semi-solid material with no odor.

TABLE 7

Illinois Pollution Control Board

Chapter 3: Water Pollution

	Surface		Groundwater		Effluent	
	Lower Limit	Upper Limit	Lower Limit	Upper Limit	Lower Limit	Upper Limit
Alkalinity	NE	NE	NE	NE	NE	NE
Ammonia (NH_4)	NE	1.5	NE	1.5	NE	NE
Arsenic (As)	NE	1.0	NE	.05	NE	.25
Barium (Ba)	NE	5.0	NE	1.0	NE	2.0
BOD-5	NE	NE	NE	30.0	NE	30.0
Boron (B)	NE	1.0	NE	1.0	NE	NE
Cadmium (Cd)	NE	.05	NE	.01	NE	.15
COD	NE	NE	NE	NE	NE	NE
Chloride (Cl)	NE	500	NE	250	NE	NE
Chromium (Cr Tot.)	NE	NE	NE	.05	NE	NE
Chromium (Cr+3)	NE	1.0	NE	1.0	NE	1.0
Chromium (Cr+6)	NE	.05	NE	.05	NE	.3
Copper (Cu)	NE	.02	NE	.02	NE	1.0
Cyanide (Cn)	NE	.025	NE	.025	NE	.1
Dissolved Oxygen	5.0	NE	5.0	NE	NE	NE
Fecal Coliform	NE	400.0	NE	400.0	NE	400.0
Flouride (F)	NE	1.4	NE	1.4	NE	15.0
Hardness	NE	NE	NE	NE	NE	NE
Iron, Total (Fe)	NE	1.0	NE	1.0	NE	2.0
Iron, Dissolved (Fe)	NE	NE	NE	.5	NE	.5
Lead (Pb)	NE	.1	NE	.05	NE	.1
Magnesium (Mg)	NE	NE	NE	NE	NE	NE
Manganese (Mn)	NE	1.0	NE	.15	NE	1.0
Mercury (Hg)	NE	.0005	NE	.0005	NE	.0005
Nickel (Ni)	NE	1.0	NE	1.0	NE	1.0
Nitrate (NO_3)	NE	NE	NE	10.0	NE	NE
Oil	NE	NE	NE	.1	NE	15.0
pH	6.5	9.0	6.5	9.0	6.0	10.0
Phenols	NE	.1	NE	.001	NE	.3
Phsophorus (P)	NE	.05	NE	.05	NE	1.0
Potassium (K)	NE	NE	NE	NE	NE	NE
R.O.E.	NE	1000	NE	500	NE	3500
Selenium (Se)	NE	1.0	NE	.01	NE	1.0
Silica (Si)	NE	NE	NE	NE	NE	NE
Silver (Ag)	NE	.005	NE	.005	NE	.1
Sodium (Na)	NE	NE	NE	NE	NE	NE
Specific Conductance	NE	NE	NE	NE	NE	NE
Sulfate (SO_4)	NE	500	NE	250	NE	NE
Sulfide	NE	NE	NE	NE	NE	NE
Total Solids	NE	NE	NE	NE	NE	NE
Total Suspended Solids	NE	NE	NE	15.0	NE	15.0
Zinc (Zn)	NE	1.0	NE	1.0	NE	1.0

General Discussion of Chemical Results

The results for almost all samples analyzed indicate that there is significant organic and inorganic contamination of the shallow ground water at both the U.S. Scrap and the Penn Central Sites. Soil samples of the upper part of the thick clay strata which were collected during boring operations were also found to be severely contaminated. The most contaminated samples were the waste material surface samples and those samples obtained from the test pit excavations.

Ground Water Samples

Ground water samples obtained from the U.S. Scrap Site were generally more contaminated than those collected at the Penn Central Site. However, all samples from both locations exceeded ground water limits (shown on Table 7) for ammonia, BOD-5, boron, manganese, phosphorus, R.O.E. (residue on evaporation) and sulfate. Similarly, all samples contained xylenes, toluene and several other organic solvents in varying concentrations, which are classified by RCRA as hazardous.

Concentrations of constituents found in ground water samples obtained from different monitoring wells varied considerably. This was mainly due to differences in the types of wastes which were disposed of throughout the site. The chemical odors detected and the organic constituents measured indicate that most of the wastes were solvent mixtures,

possibly from painting, degreasing or other industrial processes. These solvents are classified by RCRA (in Part 261) as being hazardous. Some of the inorganic constituents were also high but it is noteworthy that many metal concentrations were not measured at levels which exceeded acceptable standards.

There were also variations in chemical concentrations (in the same wells) of the samples collected in June and in October, 1981. October samples from the U.S. Scrap Site generally had higher concentrations for most parameters than those collected in June. Samples from the Penn Central site were more consistent with time. The changes may have been caused by seasonal water level fluctuations (possibly also influenced by the ground water mound) which changed the nature of the fill which was in contact with the water at the time of sample collection.

Soil and Fill Samples

Soil and fill samples collected above and below the prevailing water levels contained high concentrations of organic constituents and much lower levels of the more soluble inorganic compounds. This is consistent with the cohesive nature of the near surface fill and underlying natural clay which will readily adsorb most organic and some inorganic compounds. The high concentrations of organics should be of concern since they may pose a long-term environmental hazard caused by extended leaching of these contaminants into the ground water.

Waste and Test Pit Samples

The surface waste sample analyses revealed the organic nature of most of the waste materials disposed of at the site. Extremely high concentrations of xylenes and toluene were found in most of the waste samples (hazardous under RCRA). Chlorinated hydrocarbons (PCB's) were also measured in significant amounts. Analyses of the test pit samples were consistent with these results, indicating various organic constituents in relatively high concentrations.

Results by Boring Location

Boring G-101 (U.S. Scrap Site) - Samples obtained from this location were found to be comprised of various fill materials including a tar-like substance and some material with a brown coloration. Strong organic odors were noted in the underlying natural soil. These observations were consistent with the results which indicated a variety of organic constituents present in the ground water at concentrations greater than 1 ppm. Most notable of these were the xylenes, toluene, phenol, and aliphatic hydrocarbons. Illinois ground water standards for inorganic chemicals were exceeded by many parameters at this location. BOD-5, chloride, fluoride, iron, manganese, phosphorus and ROE were all measured at levels which exceeded the standards by at least 100% and often, by several orders of magnitude.

The soil sample analyzed from this boring was consistent with the ground water results for most of the organic constituents. Inorganic chemical concentrations were generally lower in the soil sample.

Boring G-102 (U.S. Scrap Site) - Paint sludge was observed in the upper part of this boring which appears to have influenced the results of the chemical analysis. Again, high concentrations of organics were measured, with xylenes and trimethylcyclohexanone having levels of 27 and 12 ppm, respectively. BOD levels were reduced, possibly due to natural toxicity in the sample, since COD levels were still significant.

Three soil boring samples were collected and analyzed at this location. The most contaminated was the uppermost soil sample, obtained from a depth of from 2.5 to 4 ft and identified as paint sludge. Concentrations of C_4-benzene and xylenes were lower in the underlying soil, however the aliphatic hydrocarbons were high at all depths tested. These compounds were possibly present in wastes deposited prior to the paint sludge as well as being components of the paint sludge itself.

Boring G-103 (U.S. Scrap Site) - Fill in this boring consisted of wood fragments underlain by a granular saturated material with a strong odor. Ground water samples obtained from this well contained the highest concentration of xylenes (120 ppm) found in any ground water sample. Other organic concentrations which exceeded 20 ppm included

aplihatic hydrocarbons, C_4-benzene, ethyl benzene and toluene. The COD values measured in ground water samples obtained from this well varied from 34,000 to 149,500 ppm, confirming the presence of many nonbiodegradable constituents. The alkalinity of these samples was also quite high, as were phenolics, sulfate, magnesium and many other constituents.

Only limited analyses of soil samples were performed. These indicated high levels of aliphatic hydrocarbons and xylenes in the upper soil layers.

Boring G-104 (U.S. Scrap Site)- Strong paint-like odors and a high pH level (8-10) were noted in the fill at this location. Ground water contamination levels were similar to those found in wells at G-101 and G-102. Again xylenes, toluene and trimethylcyclohexanone were measured at concentrations exceeding 20 ppm. Some additional methylated organic constituents were also measured at high levels in this location.

For the inorganic parameters in the ground water, COD values were in the 20,000 ppm range. Some metals were also analyzed at levels exceeding the standards shown on Table 7. These included zinc, selenium, nickel, arsenic, chromium, and copper. It is interesting to note that samples of tar-like fill material collected at this location contained extremely high organic concentrations (much greater than at G-101 and G-102). It appears that there is more contamination present in this material; however the constituents do not seem to be easily solubilized into the ground water.

Boring G-105 (U.S. Scrap Site) - The well screen at this location was placed in the bedrock aquifer at a depth of approximately 70 ft, so results of these analyses are especially critical in establishing the extent of underlying ground water contamination at this site. These results indicate that the shallow bedrock aquifer in the Silurian Dolomite has been contaminated by organic constituents. The ground water from the deep well contained xylenes in concentrations from 11-47 ppm, toluene at levels up to 26 ppm, and aliphatic hydrocarbon in amounts up to 22 ppm.

The presence of these organic constituents in G-105 probably cannot be attributed to the Revert which was used in the drilling process. Revert is a complex polysaccharide which eventually breaks down into simple sugars. The organic contaminants detected in the analysis of G-105 are generally not components of Revert.

In addition, we consider it unlikely that the bedrock aquifer has been contaminated by pollutants that leached from the shallow aquifer and through the thick layer of clay separating the two aquifers. As mentioned previously, laboratory permeability tests performed on samples of this clay indicate that it has a permeability of less than 10^{-7} cm/sec. With a permeability this low, seepage from the upper aquifer to the lower bedrock aquifer will be extremely slow. It is possible that the contaminants are migrating to the deep aquifer via natural fissures in the clay (highly unlikely due to the substantial thickness of the clay) or, more likely, by moving laterally in the shallow aquifer to existing water supply wells in the area and then travelling vertically down these wellholes to the deep aquifer. This would have to be substantiated however. before a final conclusion could be made.

The soil samples analyzed from this location do not relate to the ground water quality in the bedrock aquifer since they were obtained from an upper layer of red and black fill. The sample obtained from 2.5 to 4.5 feet was found to be heavily contaminated with organics. It contained almost 1% of a combination of xylenes and toluene.

Boring G-106 (Background) - This well was located approximately 1500 ft west of the U.S. Scrap Site as shown on Figure 1. The ground water contained 9.6 ppm of phenol and a small concentration of PCB's. Some constituents which exceeded standards included chromium, copper, iron, manganese and zinc.

No soil samples were analyzed.

Boring G-132 (Penn Central Site) - Various fill types were noted at two depths including wood material, a stiff clay fill and oily black cinders. The ground water contained moderate concentrations of organic constituents, most notably 4-methyl-2-pentanone, toluene, and xylenes. Phenol and methylphenol were also found at levels of approximately 9 ppm each. Ammonia concentrations were high at this location as were alkalinity, COD, chloride, sulfate and zinc.

A soil sample collected at this location (from 12.5 to 14.5 ft) contained 47 ppm of aliphatic hydrocarbons. Other organic and/or inorganic parameters were not measured. Of the two well locations on the Penn Central Site, G-132 had significantly more soil and ground water contamination than did G-133.

Boring G-133 (Penn Central Site) - This boring also encountered wood fill over a gravel material and a sandy clay fill with tar-like fluid. In general, the concentrations measured in ground water samples from this location were much lower than in ground water samples obtained from other locations. Only trimethylcyclohexanone exceeded 1 ppm. Some inorganic parameters exceeded Illinois standards but not to the extent found at any other location.

No soil samples were analyzed.

Summary of Results

The chemical data indicates that the uppermost ground water (within the fill) at both sites is severely contaminated by organic and inorganic compounds. The extent of this contamination varies, probably due to differences in waste materials placed throughout the sites. In general, the U.S. Scrap Site appears to be more contaminated than the Penn Central Site.

The ground water analyzed from the bedrock well at G-105 (at a depth of about 70 ft) was also found to contain substantial concentrations of organic and inorganic chemical constituents. While this contamination may be due to past waste disposal activities at the U.S. Scrap Site, more research and exploratory work would have to be performed to confirm this. It is unclear, based upon available information, how these chemicals entered the bedrock aquifer. As mentioned previously, the clay which separates the aquifers is thick (on the order of 55 to 60 ft) and of a low permeability (10^{-7} cm/sec).

The major type of ground water contamination throughout the two sites appears to be organic in nature, most notably, solvents such as xylenes and toluene. However, numerous other organic parameters were detected in significant quantities, indicating that overall organic contamination exists. Many inorganic constituents also exceeded Illinois standards for ground water.

Soil samples were also severely contaminated with organic compounds. Inorganic concentrations were significantly lower. It appears that the organic chemicals are being adsorbed to the soil and could, therefore, cause long-term leaching problems.

Finally, selected waste and test pit samples confirm the organic nature of the waste materials which were disposed of at the site. These samples were found to contain high concentrations of numerous organic chemicals and would generally be considered as hazardous waste materials, if the standards set forth in RCRA, Part 261 were applied.

REMEDIAL ACTION ALTERNATIVES (Ref. 4 and 5)

Based upon the information presented in this report, it is concluded that both the U.S. Scrap and the Penn Central Sites are severely contaminated with various inorganic and organic chemical constituents. In addition, while the available data is insufficient to accurately conclude the direction of ground water flow after it exits the sites, it is also assumed that ground water is entering and leaving the site and, in doing so, is being contaminated and carrying this contamination to off-site areas.

In order to stop the flow of the contaminated uppermost ground water to off-site areas, some form of effective remedial action must be implemented at both sites. By implementing proper remedial action techniques, adverse environmental and human health impacts will be minimized (or, hopefully, eliminated). The two basic concepts which should be considered in designing and selecting the final remedial action plan are 1) to remove all of the contaminated materials from the sites or 2) to contain the contaminated ground water within the site materials rather than allow it to migrate to off-site areas.

Removal of Contaminated Material

In evaluating the various remedial action alternatives, it may be considered advantageous to totally remove the contaminated materials from one or both of the subject sites. In deciding upon this option, the following factors should be considered from environmental, economic, and construction standpoints:

A. All waste materials (fill) must be removed from the site(s). In addition, several feet of the underlying clay must also be removed so that future movement of water through the soil will not cause leaching of contaminants and potential additional ground water contamination of the bedrock aquifer.

B. Removal and transport of the contaminated materials must be done in such a manner so as to prevent unnecessary exposure to the general public.

C. The materials must be disposed of in an environmentally safe manner, probably at a licensed landfill.

D. After the contaminated materials are removed, the site will require reclamation. The reclamation measures which will probably be necessary include:

1. Backfilling with clean soil or fill material to the surrounding ground level.

2. Providing a mechanism for surface runoff and erosion control.

3. Revegetating the site(s).

4. Consideration of post reclamation site use.

Waste Materials Remain in Place

If it is elected to leave the contaminated materials in place, a decision must then be made whether to 1) isolate the contaminated materials by controlling surface water infiltration and off-site ground water migration or 2) treat or detoxify the ground water, fill materials, and underlying soils.

Contaminant Isolation

If it is elected to isolate contaminated materials from the outside environment, mechanisms must be employed which will control surface water infiltration and which will preclude off-site ground water migration.

One of the primary causes of leachate generation is surface water infiltration which passes through contaminated materials and migrates downward in a contaminated state to the ground water. Therefore, reducing surface water infiltration into the contaminated materials is a prerequisite in a remedial action program designed to isolate the contaminated site materials (for that matter, this is also a prerequisite if it decided to treat the contaminated materials).

Many materials can be used to form a surface cover layer, including clay, asphalt, concrete, or other synthetic materials. Implementing one of these cover materials would also reduce the potential for contamination of surface water which runs off the U.S. Scrap and/or Penn Central Sites. It should be noted that if one of these covers is utilized, it will probably require periodic maintenance as the buried waste materials consolidate and/or degrade which would then result in differential settlements throughout the site. This could not only cause cracking or rupturing of the cover layer, but will also change the surface drainage characteristics of the site.

In addition to minimizing surface water infiltration, the cover should be designed to maximize surface runoff. By doing so, surface water will exit the site as rapidly as possible and will further help to minimize infiltration. The cover should be adequately sloped to drainage ditches which should then be designed to transport the water to nearby water courses or sewers. If a cover material is relatively impermeable and is adequate sloped, the runoff water may not require further treatment. Periodic tests should be made of this runoff water however to be sure that it contains no contaminants in excessively high concentrations.

In order to minimize the migration of contaminated ground water to off-site areas, we recommend that a seepage cutoff be installed around the entire perimeter of each site in conjunction with the surface cover. The seepage cutoff can be constructed of concrete, grout (either chemical or cement) or bentonite clay. In any case, it should be extended through the fill materials and into the underlying natural clay.

By using a combination surface cover and seepage cutoff, a completely contained unit would be formed which would be filled with contaminated waste. To monitor the effect of this unit, periodic tests of the ground water and surface water outside of the subject sites should be performed. To do this, several ground water monitoring wells will have to be installed.

Another method of halting off-site ground water migration is to excavate drainage ditches around the perimeter of the site, install drain tiles along the bottoms of the ditches (surrounded with granular material), and backfill the trenches above the drain tiles with relatively impermeable clay soils. The drain tiles would then be connected to a treatment system or a temporary holding pond. A system installed in this manner will lower the ground water table at the drainage ditch, thus reversing the ground water gradient immediately adjacent to the ditch and precluding movement of site ground water to off-site areas. These systems do require maintanence, however, as well as requiring treatment of the collected water.

In conjunction with the drainage ditch concept, the ground water in the uppermost aquifer (fill materials) could be pumped by using wellpoints and then treated before it is recharged to the ground water table. Disadvantages of this concept, however, are that it is expensive from the standpoint of pumping costs and treatment costs and also that it is technically very difficult to completely intercept the ground water before it migrates to off-site areas. The wellpoints would have to be very closely spaced in order to adequately remove all the water tending to flow between them.

In-Situ Treatment and/or Detoxification

In-situ treatment and detoxification of contaminated soils are relatively new concepts and, as such, are untried in comparison with the more common physical techniques of material removal or containment. When detoxification is performed, it is commonly done by excavating the contaminated materials, treating them above grade, and then replacing them to their original location.

Some of the more commonly used in-situ treatment techniques include water flushing, chemical reaction, physical mixing, fixation, and microbiologic activity.

Since the waste materials which were disposed of at the U.S. Scrap and Penn Central Sites span a wide variety of physical and chemical characteristics, it may not be possible to detoxify them with a single treatment method. The remedial action selection process must consider all of the treatment methods which would be required at each particular site.

GENERAL QUALIFICATIONS

This report has been prepared in order to aid in the evaluation of the subject site and to assist the Illinois Attorney General in evaluating the subsurface contamination at the US Scrap and Penn Central Sites. The scope is limited to the specific project and locations described herein, and our description of the project represents our understanding of the significant environmental aspects and/or implications pertaining to the project as communicated to us by the Illinois Attorney General's Office. In the event that any deviations from the understood scope of work occur, STS should be informed so that changes can be reviewed and that conclusions presented in this report modified, if appropriate. Should changes in the scope of intent of the project occur without STS having the opportunity to review the changes and comment on the geotechnical or environmental consequences of the changes, STS assumes no liability for any resulting damages.

It is recommended that all construction operations resulting from recommendations presented in this report be observed by an engineer or geologist, experienced in evaluating soil-ground water systems. If you wish, STS would welcome the opportunity to provide these field services for you at the appropriate time. In addition, we would welcome the opportunity to review plans, specifications, reports and/or permits when they have been prepared so that we may have the opportunity of commenting on their effect(s) on the overall project.

The analysis and recommendations submitted in this report are based upon data obtained from soil borings performed at locations which are indicated on the location diagram and from other information as outlined in the report. This report does not reflect any variations which may occur between the boring or test pit locations; rather, specific information was obtained at the specific boring and test pit locations at specific times. It is a well-known fact that variations in soil, rock and ground water conditions can occur between such locations.

In addition, ground water monitoring wells were installed on this project. It can be expected that ground water levels may vary seasonally and annually due to precipitation, evaporation, surface runoff, and percolation. Variations of several feet are not uncommon. Therefore, interpretations made concerning the ground water characteristics using the available monitoring well readings are estimates based on the experience of the engineer, geologist, or chemist.

Chemical concentrations may also vary significantly between sampling times due to the environmental factors mentioned above and the introduction of chemicals into the soil and ground water from natural or man-made sources. Therefore, test results obtained from samples taken at discrete points in time do not provide continuous monitoring of the chemical concentrations. However, the chemical testing program performed by the Illinios Environmental Protection Agency was performed in order to systematically test the chemical content of site materials so that a reasonable engineering evaluation of the chemical concentrations and their variations could be made.

Should construction procedures be implemented after submittal of this report, unanticipated subsurface conditions may occur. For this reason, we recommend that a "Changed Conditions" clause be provided in the contract both with the general contractor and in all contracts with the sub-contractors involved in underground work. It is felt that the inclusion of this clause will permit contractors to submit lower prices because they will not need to provide as many contingencies as they normally would if equitable adjustment of changed conditions will minimize conflicts and litigation with the attendant delays and costs. Furthermore, by the immediate recognition and adjustment in contract price at the time any changed conditions are encountered, the immense problems of trying to recreate facts when litigation develops later is eliminated.

REFERENCES

1. "Summary of the Geology of the Chicago Area" by H.B. Willman, Illinois State Geological Survey Circular 460; 1971.

2. "Preliminary Report on Ground-Water Resources of the Chicago Region, Illinois" by Max Suter, Robert E. Bergstrom, H.F. Smith, Grover H. Emrich, W.C. Walton, and T.E. Larson. Illinois State Geological Survey/Illinois State Water Survey Cooperative Ground-Water Report One; 1959.

3. United States Environmental Protection Agency, "Resource Conservation and Recovery Act: Hazardous Waste Management System", Federal Register, May 19, 1980.

4. Soil Testing Services, Inc., "Solutions to Waste Disposal Problems", Seminar Presented April 11, 1980 in Chicago, Illinois.

5. United States Environmental Protection Agency, "Closure of Hazardous Waste Surface Impoundments", SW-873, September, 1980.

APPENDIX

A. Soil Boring Logs

Standard Clause for Unanticipated Subsurface Conditions
General Notes
Procedures Regarding Field Logs, Laboratory Data Sheets and Samples
ASTM Specifications
D-1586-67
D-1587-67
Unified Soil Classification System

B. Monitoring Well Diagrams

C. Test Pit Logs

D. Summary of Geophysical Data

E. Summary of Permeability Test Results

APPENDIX A

Soil Boring Logs

Standard Clause for Unanticipated Subsurface Conditions

General Notes

Procedures Regarding Field Logs, Laboratory Data Sheets & Samples

ASTM Specifications
D-1586-67
D-1587-67

Unified Soil Classification System

OWNER	LOG OF BORING NUMBER
Illinois Attorney General	G-101
PROJECT NAME	**ARCHITECT-ENGINEER**
Contamination Survey	

SITE LOCATION
Lake Calumet Area, Chicago, Illinois

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION +15.7 CCD	
	1	SS			Silty clay fill, trace gravel, sand & roots -brown, gray & black (CL-Fill)	
		PA				
	2	SS			Tar-like material, trace wood fragments -black- saturated (Fill) Strong organic odor	
3.0		PA				
	3	SS			Tar-like material (sludge) -black- saturated (Fill) Strong turpentine-type odor (Geologist's observation)	
		PA				
	4	SS				
10.0		PA			Tar-like material (sludge) mixed with rusty brown cinders & gravel - black & rusty brown- saturated (Fill)	
	5	SS				
		RB				
	—					
15.0		RB			Silty clay, trace gravel, sand and shale -gray- very stiff (CL) Slight sweet odor	
17.0	6	ST				111
					END OF BORING	
					Casing used: 10' of 4"	
					NOTE: See "Well Detail - G-101" for monitoring well characteristics	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)
PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10 20 30 40 50)
STANDARD PENETRATION BLOWS/FT (10 20 30 40 50)

9 7 12 20 52 50

*CALIBRATED PENETROMETER

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES: IN-SITU THE TRANSITION MAY BE GRADUAL

WL 2' WD or WD	BORING STARTED 6/22/81	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL SCR ACR	BORING COMPLETED 6/22/31	
WL 5' AR	RIG Rotary FOREMAN Baker	APP'D BY MCS/ms STS JOB NO. 22063

OWNER: Illinois Attorny General

LOG OF BORING NUMBER: G-102

PROJECT NAME: Contamination Survey

ARCHITECT-ENGINEER:

SITE LOCATION: Lake Calumet Area, Chicago, Illinois

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10, 20, 30, 40, 50)

STANDARD PENETRATION BLOWS/FT. (10, 20, 30, 40, 50)

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION +18.2 CCD	
	1	SS			"A" Little gravel (Fill) Paint sludge	
	2	SS				
5.6	3	SS			Sand and cinder fill -black- medium dense (SP-Fill)	
	4	SS			Silty clay, trace gravel & sand - light brown- stiff (CL)	
10.0	5	SS				
	6	SS			Silty clay, trace gravel, sand and shale -brown & gray- very stiff to hard (CL)	
		RB				
	7	SS			Silty clay, trace gravel, sand and shale -gray- hard (CL)	
15.0		RB				

END OF BORING

"A" - Clayey topsoil, trace sand & roots -dark brown (OH-Fill)

Casing used: 10' of 4"

NOTE: Consistency of clay based upon Standard Penetration Tests.
See "Well Detail - G-102" for monitoring well characteristics.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES: IN-SITU THE TRANSITION MAY BE GRADUAL

WL 4.5' WS [illegible]

WL BCR ACR

WL

BORING STARTED 6/24/81

BORING COMPLETED 6/24/81

RIG Rotary FOREMAN Baker

SOIL TESTING SERVICES, INC.
111 PFINGSTEN ROAD
NORTHBROOK ILLINOIS 60062

APP'D BY MGS/ms STS JOB NO. 22053

OWNER	LOG OF BORING NUMBER
Illinois Attorney General	G-103
PROJECT NAME	**ARCHITECT-ENGINEER**
Contamination Survey	

SITE LOCATION
Lake Calumet Area, Chicago, Illinois

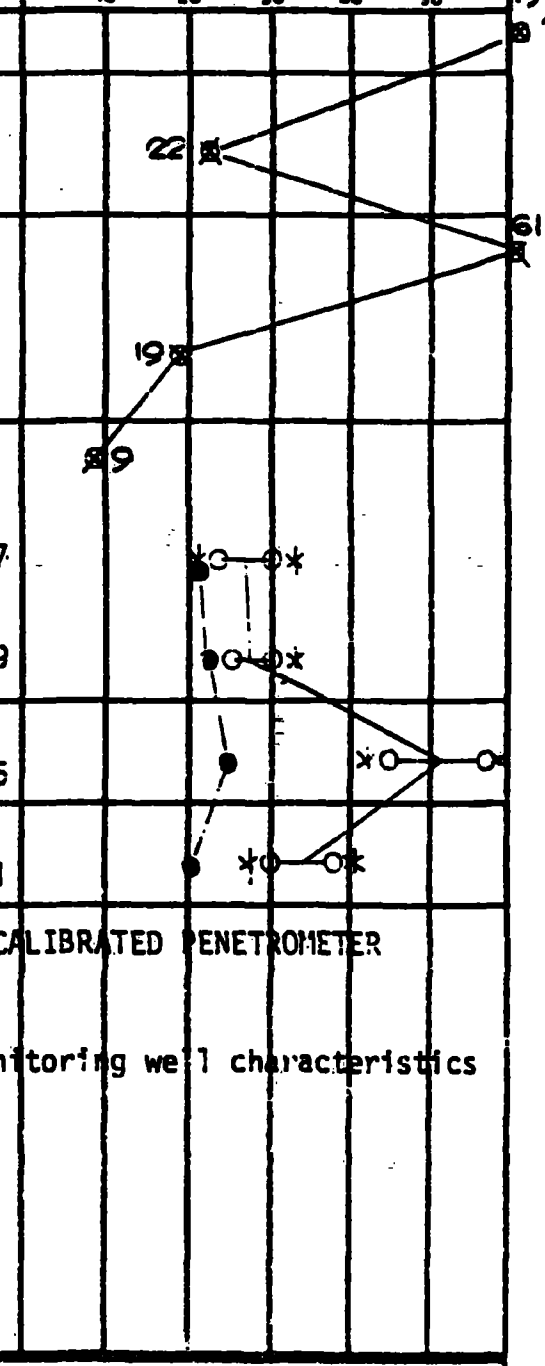
ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION +13.7 CCD	
	1	SS			Miscellaneous fill material -dark & light brown- extr. dense (Fill) No noticeable odor	
		RB				
	2	SS			Gravelly fill with wood fragments - gray- medium dense (Fill)	
5.0		RB				
	3	SS			Granular fill saturated with fluid having a strong organic odor -black- very dense to extr. dense (Fill)	
		RB				
	4	SS				
10.0		RB				
	5	SS			Silty clay, trace gravel, sand and shale -brown & gray with dk. gray spots - very stiff (CL) Strong chemical odor	
		RB				
	6	ST			$K = 1 \times 10^{-8}$ cm/sec	107
15.0		RB				
	7	ST			Silty clay, trace gravel, sand and shale -brown & partly gray- hard (CL-CH)	109
		RB				
	8	ST				105
20.0		RB				
	9	ST			Silty clay, trace gravel, sand and shale -gray & little brown- very stiff (CL) $K = 3 \times 10^{-7}$ cm/sec	111
					END OF BORING	
					NOTE: See "Well Detail - G-103" for monitoring well characteristics	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² — 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

10 20 30 40 50

STANDARD PENETRATION BLOWS/FT. — 10 20 30 40 50



*CALIBRATED PENETROMETER

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL WS or WD	BORING STARTED 6/26/81	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL BCR ACR	BORING COMPLETED 6/26/81	
WL	RIG Rotary FOREMAN Baker	APP'D BY MGS/ms STS JOB NO. 22063

OWNER	LOG OF BORING NUMBER
Illinois Attorney General	G-104
PROJECT NAME	**ARCHITECT-ENGINEER**
Contamination Survey	
SITE LOCATION	
Lake Calumet Area, Chicago, Illinois	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT² — 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

10 20 30 40 50

STANDARD PENETRATION BLOWS/FT — 10 20 30 40 50

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION +15.7 CCD	
	1A	SS			"A"	
	1B				"B"	
	2	SS			Tar-like material (sludge),-trace gravel, wood & brick (Fill) Strong paint odor	
		PA			Sandy & gravelly fill material, trace brick & wood -black & gray- very dense (Fill) Strong paint odor (pH = 9 to 10)	
5.0	3	SS				
		PA			Sandy tar-like fill material -black & gray- med. dense - saturated at 6 ft (Fill) Strong turpentine odor	
	4	SS				
10.0		PA				
	5	SS			Silty clay, trace gravel & sand - brown & gray- very stiff (CL) Slight paint odor - Consistency based on Standard Penetration Test	
		RB				
		RB			Silty clay, trace gravel, sand and shale -gray- very stiff (CL)	
15.0						
	6	ST				111
17.0					END OF BORING	

*CALIBRATED PENETROMETER

"A" - Clayey topsoil, trace wood, slag & paint residue (Fill) Paint-like odor

"B" - Sandy and gravelly fill material (Fill) Strong paint-like odor (pH = 8 to 9)

Casing used: 10' of 4"

NOTE: See "Well Detail - G-104" for monitoring well characteristics.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES IN-SITU. THE TRANSITION MAY BE GRADUAL

WL 6: WS or WD XX(XX)	BORING STARTED 6/22/81	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL BCR ACR	BORING COMPLETED 6/22/81	
WL	RIG Rotary FOREMAN Baker	APP'D BY MGS/ms STS JOB NO. 22063

OWNER: Illinois Attorney General

LOG OF BORING NUMBER: G-105

PROJECT NAME: Contamination Survey

ARCHITECT-ENGINEER:

SITE LOCATION: Lake Calumet Area, Chicago, Illinois

SURFACE ELEVATION +15.2 CCD

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
	1	SS			Cinder fill, little gravel -black- very dense (Fill) Strong paint odor	
		RB				
	2	SS			Brick fill, little clayey topsoil -red & black- (Fill) Strong paint odor	
5.0		RB				
	3	SS				
		RB				
	4	SS			Sandy clay, little silt -brown and gray- stiff (CL) Moderate paint odor. NOTE: Consistency based on Standard Penetration Test	
10.0		RB				
	5	ST				119
		FT				
	6	ST				
15.0		FT				
	7	ST			Silty clay, trace gravel, sand and shale -brown & gray- hard (CL)	114
		FT				
		FT			Silty clay, trace gravel, sand and shale -gray- very stiff (CL)	
20.0	8	ST				110
		FT				
25.0	9	ST				109
		FT				
30.0	10	ST				
	10A				Silty clay, little sand, trace gravel & shale -gray- hard (CL)	128
		FT				
35.0						
37.0	11	ST				

Continued on Next Page

OWNER: Illinois Attorney General

LOG OF BORING NUMBER: G-105 (cont.)

PROJECT NAME: Contamination Survey

ARCHITECT-ENGINEER:

SITE LOCATION: Lake Calumet Area, Chicago, Illinois

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					Continued from Previous Page	
37.0		FT			Silty clay, little sand, trace gravel & shale -gray- hard (CL)	
40.0	12	ST			$K = 2 \times 10^{-8}$ cm/sec	
		FT				
45.0	13	ST				125
		FT				
50.0	14	SS				
55.0		FT				
	15	SS				
		FT				
60.0	k6	SS			Clayey silt, trace gravel, sand and shale -gray- extr. dense - moist (ML)	
		FT				
63.0	17	SS			Broken bedrock and/or boulders. NOTE: Revert used at 66 ft to stop cave-in.	
		RB			Limestone bedrock	
63.0					END OF BORING	
					Continued on Next Page	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10 20 30 40 50)

STANDARD PENETRATION BLOWS/FT. (10 20 30 40 50)

*CALIBRATED PENETROMETER

OWNER	LOG OF BORING NUMBER
Illinois Attorney General	G-105 (cont.)
PROJECT NAME	**ARCHITECT-ENGINEER**
Contamination Survey	
SITE LOCATION	
Lake Calumet Area, Chicago, Illinois	

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT² 1 2 3 4 5 · PLASTIC LIMIT % · WATER CONTENT % · LIQUID LIMIT % · 10 20 30 40 50 · STANDARD PENETRATION BLOWS/FT. 10 20 30 40 50
					SURFACE ELEVATION		

Continued from Previous Page

NOTE: See "Well Detail - G-105" for monitoring well characteristics
Obstruction encountered at 1.5 ft. Boring offset 4 ft north

Casing used: 10' of 4"

Page 3 of 3

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES! IN-SITU. THE TRANSITION MAY BE GRADUAL

WL 6' WS or WD	BORING STARTED 6/23/81	SOIL TESTING SERVICES, INC.
WL BCR ACR	BORING COMPLETED 6/23/81	111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL	RIG Rotary FOREMAN Baker	APP'D BY MGS/ms STS JOB NO. 22063

OWNER: Illinois Attorney General

LOG OF BORING NUMBER: G-106

PROJECT NAME: Contamination Survey

ARCHITECT-ENGINEER:

SITE LOCATION: Lake Calumet Area, Chicago, Illinois

SURFACE ELEVATION: +9.9 CCD

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
	1	SS			Granular fill -black (Fill)	
	1A				Med. to coarse Sand -rust (SP)	
	2	SS			"A" Med. to coarse sand -rust (SP)	
	2A					
5.0	3	ST				110
	4	ST			Silty clay, trace gravel, sand, shale & gypsum crystals -brown & gray- stiff to very stiff (CL)	
		PA				
	5	SS				
	5A				Silty clay, trace gravel, sand and shale -gray- very stiff (CL)	
10.0		PA				
	6	ST			$K = 3 \times 10^{-8}$ cm/sec	113
		PA				
	7	ST				107
14.5						
					END OF BORING	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² — 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

10 20 30 40 50

STANDARD PENETRATION BLOWS/FT — 10 20 30 40 50

*CALIBRATED PENETROMETER

"A" - Silty clay, little topsoil -brown, gray and black (CL)

NOTE: See "Well Detail -G-106" for monitoring well characteristics

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES: IN-SITU THE TRANSITION MAY BE GRADUAL

WL 2' WS ▽WD	BORING STARTED 6/26/81	SOIL TESTING SERVICES, INC.	
WL BCR ACR	BORING COMPLETED 6/26/81	111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062	
WL	RIG Auger FOREMAN Baker	APP'D BY MGS/ms	STS JOB NO. 22063

OWNER: Illinois Attorney General

LOG OF BORING NUMBER: G-132

PROJECT NAME: Contamination Survey

ARCHITECT-ENGINEER:

SITE LOCATION: Lake Calumet Area, Chicago, Illinois

SURFACE ELEVATION +19.8 CCD

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5) / PLASTIC LIMIT % / WATER CONTENT % / LIQUID LIMIT % (10 20 30 40 50) / STANDARD PENETRATION BLOWS/FT (10 20 30 40 50)
	1	SS			Sandy & gravelly fill (crushed stone) -lt. gray- medium dense to very dense (Fill) Very high pH level		71
	2	SS					26
5.0	3	SS			Wood - no sample recovered		47
	4	SS					49
	4A				Clayey fill, trace gravel, sand and wood -black & gray- very stiff - Very strong paint odor		21
	5	SS					22
10.0	5A						19
	6	SS			Oily cinder fill -black- medium dense - saturated with oil		27
		RB					
	7	SS			Silty organic clay -black- stiff to very stiff (OH)		14
	7A						19
15.0		RB					
	8	SS			Silty clay, trace gravel, sand and shale -brown & gray- very stiff (CL)		24
		RB					
	9	SS					16
20.0		RB					
	10	SS			Silty clay, trace gravel, sand and shale -gray- hard (CL)		27
		RB					
	11	SS					59
25.0					END OF BORING		

NOTE: Obstruction encountered at 4.5 ft. Boring reset 5 ft south. Consistencies of clay based on Standard Penetration Test. See "Well Detail -G-132" for monitoring well characteristics.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES, IN-SITU THE TRANSITION MAY BE GRADUAL

WL WS or WD	BORING STARTED 6/25/81	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL BCR ACR	BORING COMPLETED 6/25/81	
WL	RIG Rotary FOREMAN Baker	APP'D BY MGS/msj STS JOB NO. 22063

OWNER: Illinois Attorney General

LOG OF BORING NUMBER: G-133

PROJECT NAME: Contamination Survey

ARCHITECT-ENGINEER:

SITE LOCATION: Lake Calumet Area, Chicago, Illinois

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10, 20, 30, 40, 50)

STANDARD PENETRATION BLOWS/FT (10, 20, 30, 40, 50)

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION +17.4 CCD	
	1	SS			Clayey topsoil, little wood, trace roots -dk. brown (OH-Fill)	
		RB				
	2	SS			Saturated wood fragments -black- (Fill) Sample 3: not recovered	
5.0		RB				
	3	SS				
		RB			Gravel fill -light gray- extr. dense - saturated (GP-Fill) Very high pH level	
	4	SS				
		RB				
10.0		RB				
	5	SS			Sandy clay fill (slightly tar-like), trace wood, gravel & roots -black- very stiff (Fill) Paint odor	
		RB				
	6	SS			Silty clay, trace gravel, sand and shale -brown, gray & black- stiff to very stiff (CL) Paint odor	
15.0		RB				
	7	SS			Silty clay, trace gravel, sand and shale -grayish brown- stiff (CL) Slight paint odor	
		RB				
	8	SS			Silty clay, trace gravel, sand and shale -grayish brown- very stiff to hard (CL)	
20.0		RB				
	9	SS			Silty clay, trace gravel, sand and shale -brownish gray- very stiff to hard (CL)	
		RB				
25.0	10	SS				
					END OF BORING	

NOTE: Consistencies of clay based on Standard Penetration Tests
See "Well Detail - G-133" for monitoring well characteristics.

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES: IN-SITU THE TRANSITION MAY BE GRADUAL

WL 3.8 WS ▽ WD	BORING STARTED 6/24/81	SOIL TESTING SERVICES, INC.	
WL BCR ACR	BORING COMPLETED 6/24/81	111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062	
WL	RIG Rotary FOREMAN Baker	APP'D BY MGS/ms	STS JOB NO. 22063

Standard Clause for Unanticipated Subsurface Conditions

"The owner has had a subsurface investigation performed by a foundation consultant, the results of which are contained in the consultant's report. The consultant's report presents his conclusions on the subsurface conditions based on his interpretation of the data obtained in the investigation. The contractor acknowledges that he has reviewed the consultant's report and any addenda thereto, and that his bid for earthwork operations is based on the subsurface conditions, as described in that report. It is recognized that a subsurface investigation may not disclose all conditions as they actually exist and further, conditions may change, particularly groundwater conditions, between the time of a subsurface investigation and the time of earthwork operations. In recognition of these facts, this clause is entered in the contract to provide a means of equitable additional compensation for the contractor if adverse unanticipated conditions are encountered and to provide a means of rebate to the owner if the conditions are more favorable than anticipated.

At any time during earthwork, paving and foundation construction operations that the contractor encounters conditions that are different than those anticipated by the foundation consultant's report, he shall immediately (within 24 hours) bring this fact to the owner's attention. If the owner's representative on the construction site observes subsurface conditions which are different than those anticipated by the foundation consultant's report, he shall immediately (within 24 hours) bring this fact to the contractor's attention. Once a fact of unanticipated conditions has been brought to the attention of either the owner or the contractor, and the consultant has concurred, immediate negotiations will be undertaken between the owner and the contractor to arrive at a change in contract price for additional work or reduction in work because of the unanticipated conditions. The contractor agrees that the following unit prices would apply for additional or reduced work under the contract. For changed conditions for which unit prices are not provided, the additional work shall be paid for on a time and material basis."

Another example of a changed conditions clause can be found in paper No. 4035 by Robert F. Borg published in ASCE Construction Division Journal, No. CO2, September 1964, page 37.

GENERAL NOTES

DRILLING & SAMPLING SYMBOLS:

SS	:	Split Spoon - 1 3/8" I.D., 2" O.D. Unless otherwise noted	OS	:	Osterberg Sampler - 3" Shelby Tube
ST	:	Shelby Tube - 2: O.D., Unless otherwise noted	HS	:	Hollow Stem Auger
PA	:	Power Auger	WS	:	Wash Sample
DB	:	Diamond Bit - NX, BX, AX	FT	:	Fish Tail
AS	:	Auger Sample	RB	:	Rock Bit
JS	:	Jar Sample	BS	:	Bulk Sample
VS	:	Vane Shear	PM	:	Pressuremeter Test, In-Situ
			CS	:	Giddings Sampler

Standard "N" Penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2 inch O.D. split spoon sampler, except where otherwise noted.

WATER LEVEL MEASUREMENT SYMBOLS:

WL	:	Water Level	WCI	:	Wet Cave In
WS	:	While Sampling	DCI	:	Dry Cave In
WD	:	While Drilling	BCR	:	Before Casing Removal
AB	:	After Boring	ACR	:	After Casing Removal

Water levels indicated on the boring logs are the levels measured in the boring at the times indicated. In pervious soils, the indicated elevations are considered reliable groundwater levels. In impervious soils, the accurate determination of ground water elevations may not be possible, even after several days of observations; additional evidence of ground water elevations must be sought.

GRADATION DESCRIPTION & TERMINOLOGY:

Coarse Grained or Granular Soils have more than 50% of their dry weight retained on a #200 sieve; they are described as: boulders, cobbles, gravel or sand. Fine Grained soils have less than 50% of their dry weight retained on a #200 sieve; they are described as: clays or clayey silts if they are cohesive and silts if they are non-cohesive. In addition to gradation, granular soils are defined on the basis of their relative in-place density and fine grained soils on the basis of their strength or consistency and their plasticity.

Major Component Of Sample	Size Range	Descriptive Term Of Components Also Present in Sample	Percent Of Dry Weight
Boulders	Over 8 in. (200 mm)	Trace	1 - 9
Cobbles	8 inches to 3 inches (200 mm to 75 mm)	Little	10 - 19
Gravel	3 inches to #4 sieve (75 mm to 4.76 mm)	Some	20 - 34
Sand	#4 to #200 sieve (4.76 mm to 0.074 mm)	And	35 - 50
Silt	Passing #200 sieve (0.074 mm to 0.005 mm)		
Clay	Smaller than 0.005 mm		

CONSISTENCY OF COHESIVE SOILS:

Unconfined Compressive Strength, Qu, tsf	Consistency
< 0.25	Very Soft
0.25 - 0.49	Soft
0.50 - 0.99	Medium (Firm)
1.00 - 1.99	Stiff
2.00 - 3.99	Very Stiff
4.00 - 8.00	Hard
> 8.00	Very Hard

RELATIVE DENSITY OF GRANULAR SOILS:

N - Blows per ft.	Relative Density
0 - 3	Very Loose
4 - 9	Loose
10 - 29	Medium Dense
30 - 49	Dense
50 - 80	Very Dense
80+	Extremely Dense

PROCEDURES REGARDING FIELD LOGS,

LABORATORY DATA SHEETS AND SAMPLES

In the process of obtaining and testing samples and preparing this report, procedures are followed that represent reasonable and accepted practice in the field of soil and foundation engineering.

Specifically, field logs are prepared during performance of the drilling and sampling operations which are intended to portray essentially field occurrences, sampling locations and other information.

Samples obtained in the field are frequently subjected to additional testing and reclassification in the laboratory by more experienced soil engineers, and differences between the field logs and the final logs exist.

The engineer preparing the report reviews the field and laboratory logs, classifications and test data, and in his judgement in interpreting this data, may make further changes.

Samples taken in the field, some of which are later subjected to laboratory tests, are retained in our laboratory for sixty days and are then destroyed unless special disposition is requested by our client. Samples retained over a long period of time, even in sealed jars, are subject to moisture loss which changes the apparent strength of cohesive soil, generally increasing the strength from what was originally encountered in the field. Since they are then no longer representative of the moisture conditions initially encountered, an inspection of these samples should recognize this factor.

It is common practice in the soil and foundation engineering profession that field logs and laboratory data sheets not be included in engineering reports, because they do not represent the engineer's final opinions as to appropriate descriptions for conditions encountered in the exploration and testing work. On the other hand, we are aware that perhaps certain contractors and subcontractors submitting bids or proposals on work might have an interest in studying these documents before submitting a bid or proposal. For this reason, the field logs will be retained in our office for inspection by all contractors submitting a bid or proposal. We would welcome the opportunity to explain any changes that have and typically are made in the preparation of our final reports, to the contractor or subcontractors, before the firm submits its bid or proposal, and to describe how the information was obtained to the extent the contractor or subcontractor wishes. Results of laboratory tests are generally shown on the boring logs or are described in the text of the report, as appropriate.

The descriptive terms and symbols used on the logs are described on the attached sheet, entitled, General Notes.

AMERICAN SOCIETY FOR TESTING AND MATERIALS

1916 Race St., Philadelphia, Pa. 19103

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Standard Method for

PENETRATION TEST AND SPLIT-BARREL SAMPLING OF SOILS[1]

ASTM Designation: D 1586 – 67

This Standard of the American Society for Testing and Materials is issued under the fixed designation D 1586; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval.

1. Scope

1.1 This method describes a procedure for using a split-barrel sampler to obtain representative samples of soil for identification purposes and other laboratory tests, and to obtain a measure of the resistance of the soil to penetration of the sampler.

2. Apparatus

2.1 *Drilling Equipment*—Any drilling equipment shall be acceptable that provides a reasonably clean hole before insertion of the sampler to ensure that the penetration test is performed on undisturbed soil, and that will permit the driving of the sampler to obtain the sample and penetration record in accordance with the procedure described in 3. Procedure. To avoid "whips" under the blows of the hammer, it is recommended that the drill rod have a stiffness equal to or greater than the A-rod. An "A" rod is a hollow drill rod or "steel" having an outside diameter of 1⅝ in. or 41.2 mm and an inside diameter of 1⅛ in. or 28.5 mm, through which the rotary motion of drilling is transferred from the drilling motor to the cutting bit. A stiffer drill rod is suggested for holes deeper than 50 ft (15 m). The hole shall be limited in diameter to between 2¼ and 6 in. (57.2 and 152 mm).[2]

2.2 *Split-Barrel Sampler*—The sampler shall be constructed with the dimensions indicated in Fig. 1. The drive shoe shall be of hardened steel and shall be replaced or repaired when it becomes dented or distorted. The coupling head shall have four ½-in. (12.7-mm) (minimum diameter) vent ports and shall contain a ball check valve. If sizes other than the 2-in. (50.8-mm) sampler are permitted, the size shall be conspicuously noted on all penetration records.

2.3 *Drive Weight Assembly*—The assembly shall consist of a 140-lb (63.5-kg) weight, a driving head, and a guide permitting a free fall of 30 in. (0.76 m). Special precautions shall be taken to ensure that the energy of the falling weight is not reduced by friction between the drive weight and the guides.

2.4 *Accessory Equipment*—Labels, data sheets, sample jars, paraffin, and other necessary supplies should accompany the sampling equipment.

3. Procedure

3.1 Clear out the hole to sampling elevation using equipment that will ensure that the material to be sampled is not disturbed by the operation. In saturated sands and silts withdraw the drill bit slowly to prevent loosening of the soil around the hole. Maintain the water level in the hole at or above ground water level.

3.2 In no case shall a bottom-discharge bit be permitted. (Side-discharge bits are permissible.) The process of jetting through an open-tube sampler and then sampling when the desired depth is reached shall not be permitted. Where casing is used, it may not be driven below sampling elevation. Record any loss of circulation or excess pressure in drilling fluid during advancing of holes.

3.3 With the sampler resting on the bottom of the hole, drive the sampler with blows from the 140-lb (63.5-kg) hammer falling 30 in. (0.76 m) until either 18 in. (0.45 m) have been penetrated or 100 blows have been applied.

3.4 Repeat this operation at intervals not longer than 5 ft (1.5 m) in homogeneous strata and at every change of strata.

3.5 Record the number of blows required to effect each 6 in. (0.15 m) of penetration or fractions thereof. The first 6 in. (0.15 m) is considered to be a seating drive. The number of blows required for the second and third 6 in. (0.15 m) of penetration added is termed the penetration resistance, *N*. If the sampler is driven less than 18 in. (0.45 m), the penetration resistance is that for the last 1 ft (0.30 m) of penetration. If less than 1 ft (0.30 m) is penetrated, the logs shall state the number of blows and the fraction of 1 ft (0.30 m) penetrated.

3.6 Bring the sampler to the surface and open. Describe carefully typical

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[1] Under the standardization procedure of the Society, this method is under the jurisdiction of the ASTM Committee D-18 on Soil and Rock for Engineering Purposes. A list of members may be found in the ASTM Year Book.

Current edition accepted Oct. 20, 1967. Originally issued 1958. Replaces D 1586 – 64 T.

[2] Hvorslev, M. J., *Surface Exploration and Sampling of Soils for Civil Engineering Purposes*. The Engineering Foundation, 345 East 47th St., New York, N. Y. 10017.

AMERICAN SOCIETY FOR TESTING AND MATERIALS

1916 Race St., Philadelphia, Pa. 19103

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Standard Method for

THIN-WALLED TUBE SAMPLING OF SOILS[1]

ASTM Designation: D 1587 – 67

This Standard of the American Society for Testing and Materials is issued under the fixed designation D 1587; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval.

1. Scope

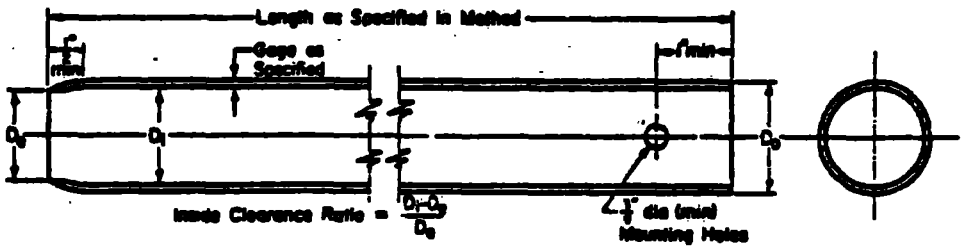
1.1 This method describes a procedure for using a thin-walled metal tube to recover relatively undisturbed soil samples suitable for laboratory tests. It is intended as a guide to more complete specifications to meet the needs of a particular job.

1.2 There are, in general, two types of samplers that use thin-walled tubes for sampling, namely, open-tube samplers, and piston samplers.[2] In general, piston samplers are better and can be used in almost all soils. Since the thin-walled tube requirements are the same for both types of samplers, the method described applies equally to both.

2. Apparatus

2.1 *Drilling Equipment*—Any drilling equipment may be used that provides a reasonably clean hole before insertion of the thin-walled tube; that does not disturb the soil to be sampled, and that can effect continuous and rapid penetration of the tube into the sampled soil.

2.2 *Thin-Walled Tubes*—Thin-walled tubes 2 to 5 in. (50.8 to 127 mm) in outside diameter and made of any materials having adequate strength and resistance to corrosion will be satisfactory (Fig. 1). Adequate resistance to corrosion can be provided by a suitable coating. Sizes other than these may be used, if specified.



Note 1—Minimum of two mounting holes on opposite sides for 2 to 3½ in. sampler.
Note 2—Minimum of four mounting holes spaced at 90 deg for samplers 4 in. and larger.
Note 3—Tube held with hardened screws.

TABLE OF METRIC EQUIVALENTS.

in.	mm	cm
3/16	6.77	...
½	12.7	1.27
1	25.4	2.54
2	...	5.08
3½	...	8.89
4	...	10.16

FIG. 1—Thin-Walled Tube for Sampling.

2.2.1 Tubes shall be of such a length that between five and ten times the diameter is available for penetration into sands and between ten and fifteen diameters is available for penetration into clays. Tubes shall be round and smooth, without bumps, dents, or scratches. They shall be clean, and free from rust and dirt. Seamless or welded tubes are permissible, but welds must not project at the seam. The cutting edge shall be machined as shown in Fig. 1 and shall be free from

TABLE 1—SUITABLE THIN-WALLED STEEL SAMPLE TUBES.[a]

Outside diameter:			
in.	2	3	5
mm	50.8	76.2	127
Wall thickness:			
Bwg	18	16	11
in.	0.049	0.065	0.120
mm	1.24	1.65	3.05
Tube length:			
in.	36	36	54
m	0.91	0.91	1.45
Clearance ratio, per cent	1	1	1

[a] The three diameters recommended in Table 1 are indicated for purposes of standardization and are not intended to indicate that sampling tubes of intermediate or larger diameters are not acceptable. Lengths of tubes shown are illustrative. Proper lengths to be determined as suited to field conditions.

Under the standardization procedure of the Society, this method is under the jurisdiction of the ASTM Committee D-18 on Soil and Rock for Engineering Purposes. A list of members may be found in the ASTM Year Book.

Current edition issued Oct. 20, 1967. Originally issued 1956. Replaces D 1587 – 63 T.

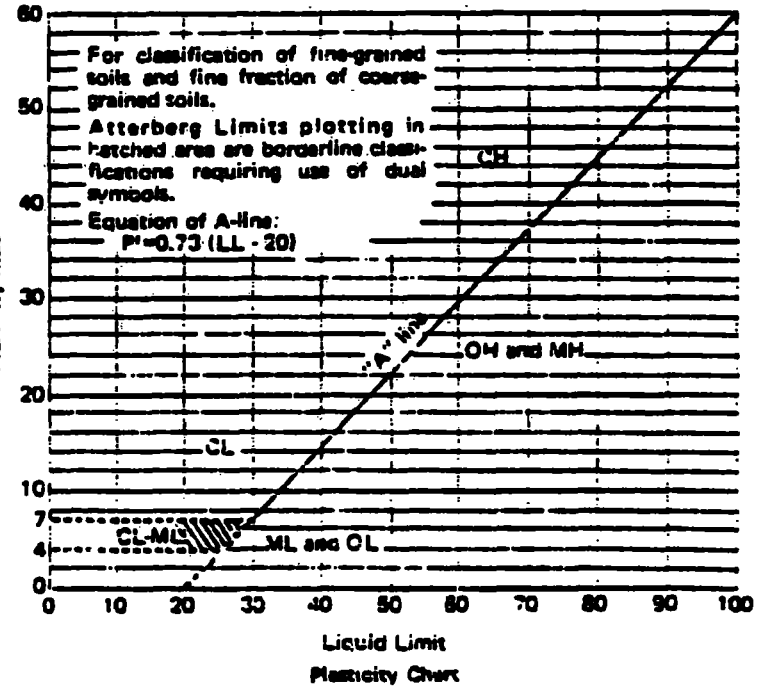
[2] Hvorslev, M. J., *Surface Exploration and Sampling of Soils for Civil Engineering Purposes*. The Engineering Foundation, 345 East 47th St., New York, N. Y. 10017.

UNIFIED SOIL CLASSIFICATION SYSTEM

Major divisions			Group symbols	Typical names	Laboratory classification criteria
Coarse-grained soils (More than half of material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW
		Gravels with fines (Appreciable amount of fines)	GM d / u	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4 — Above "A" line with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines	$C_u = \frac{D_{60}}{D_{10}}$ greater than 6; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW
		Sands with fines (Appreciable amount of fines)	SM d / u	Silty sands, sand-silt mixtures	Atterberg limits below "A" line or P.I. less than 4 — Limits plotting in hatched zone with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols.
			SC	Clayey sands, sand-clay mixtures	Atterberg limits above "A" line with P.I. greater than 7
Fine-grained soils (More than half of material is smaller than No. 200 sieve)	Silts and clays (Liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity	
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays	
			OL	Organic silts and organic silty clays of low plasticity	
	Silts and clays (Liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts	
			CH	Inorganic clays of high plasticity, fat clays	
			OH	Organic clays of medium to high plasticity, organic silts	
	Highly organic soils		Pt	Peat and other highly organic soils	

Determine percentages of sand and gravel from grain-size curve.
Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 per cent	GW, GP, SW, SP
More than 12 per cent	GM, GC, SM, SC
5 to 12 per cent	*Borderline* cases requiring dual symbols



Plasticity Chart

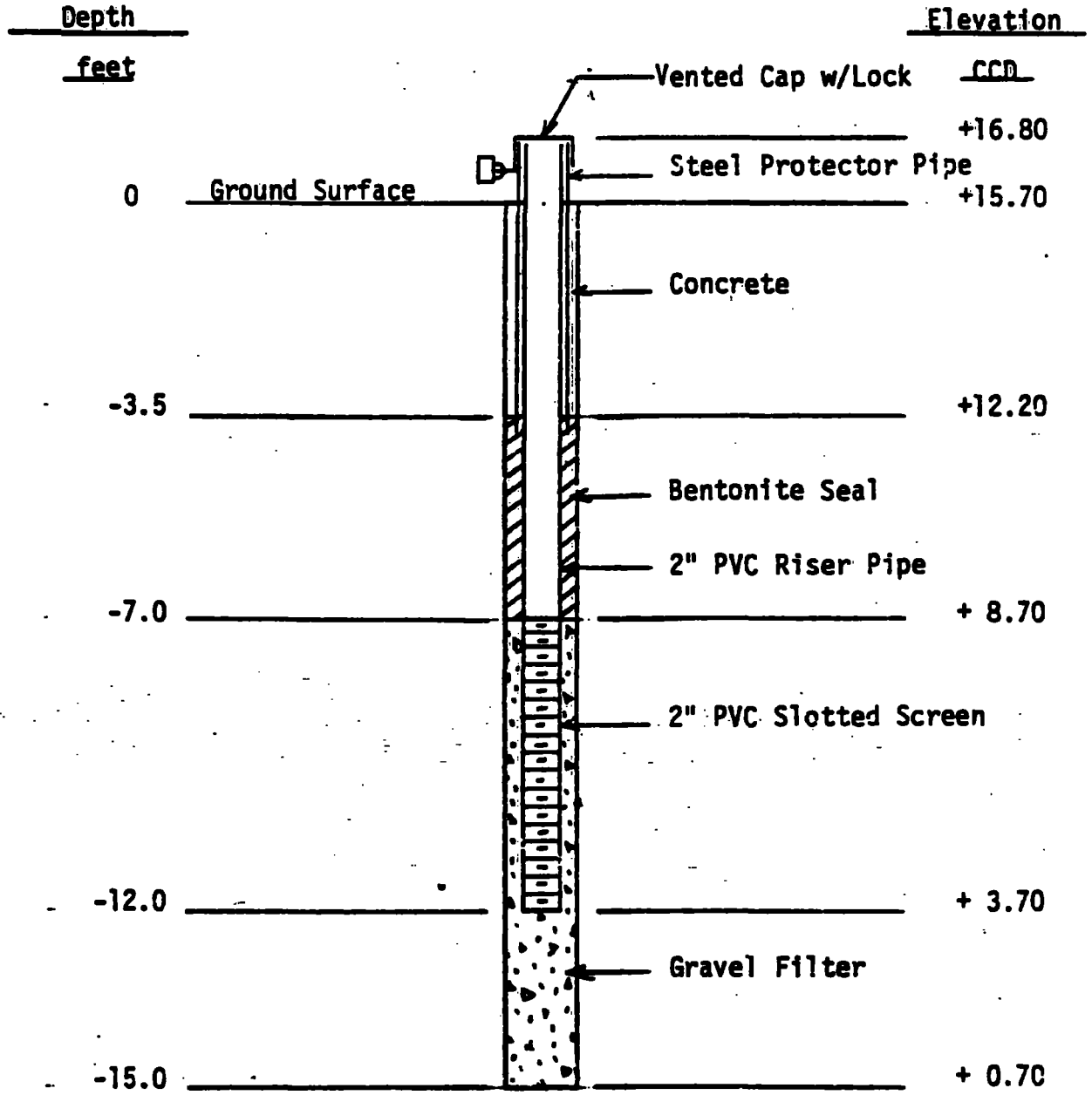
APPENDIX B

Monitoring Well Diagrams

SOIL TESTING SERVICES, INC.	DATE 7/27/81	PAGE ___ OF ___
CLIENT Illinois Attorney General STS JOB NO 22063	BY MGS	CHK ___

WELL DETAIL

G-101



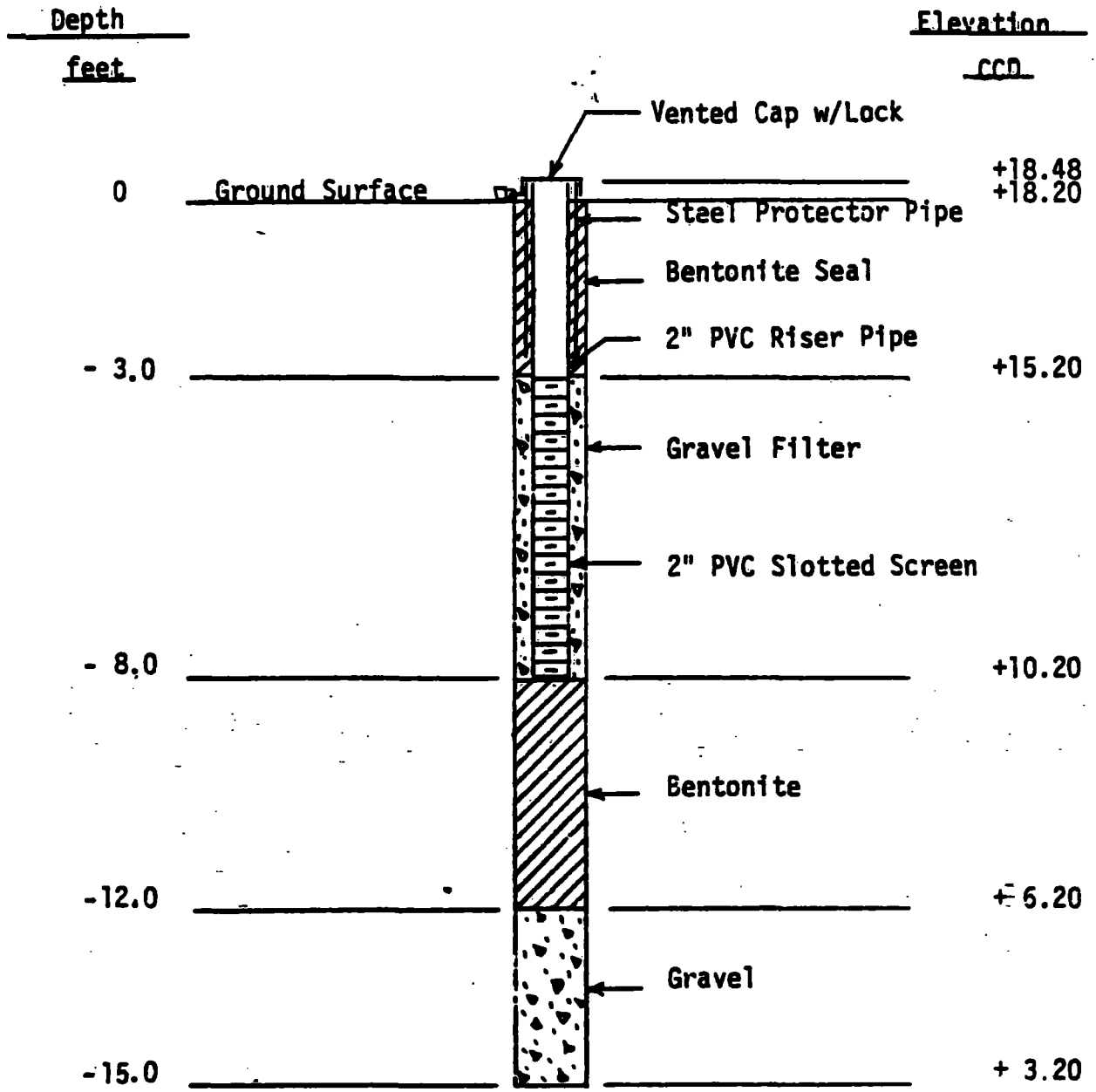
SOIL TESTING SERVICES, INC.

DATE 7/27/81 PAGE ___ OF ___

CLIENT Illinois Attorney General STS JOB NO 22063 BY MGS CHK ___

WELL DETAIL

G-102



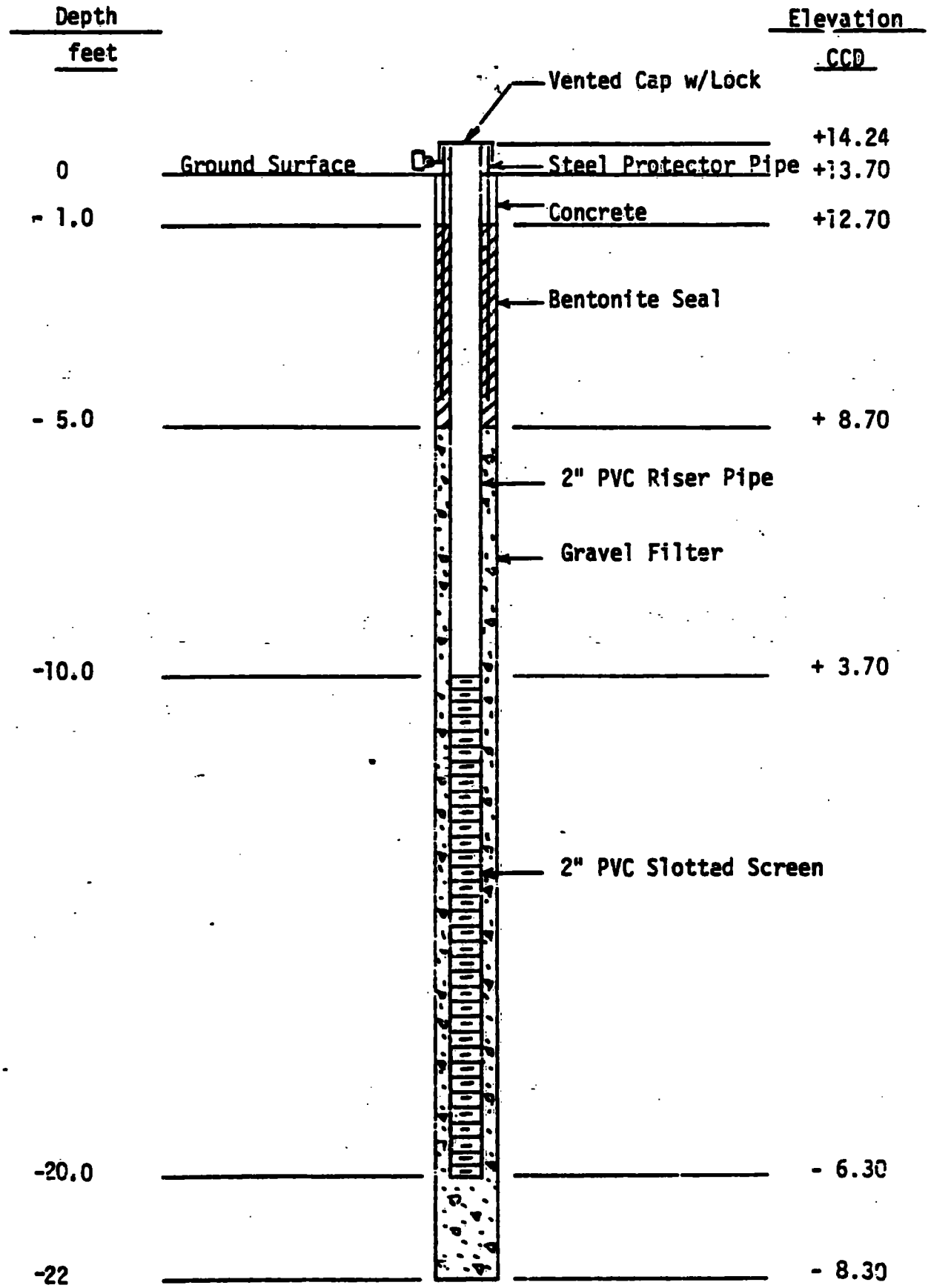
SOIL TESTING SERVICES, INC.

DATE 7/27/91 | PAGE ___ OF ___

CLIENT Illinois Attorney General STS JOB NO 22063 | BY MGS | CHK ___

WELL DETAIL

G-103



SOIL TESTING SERVICES, INC.

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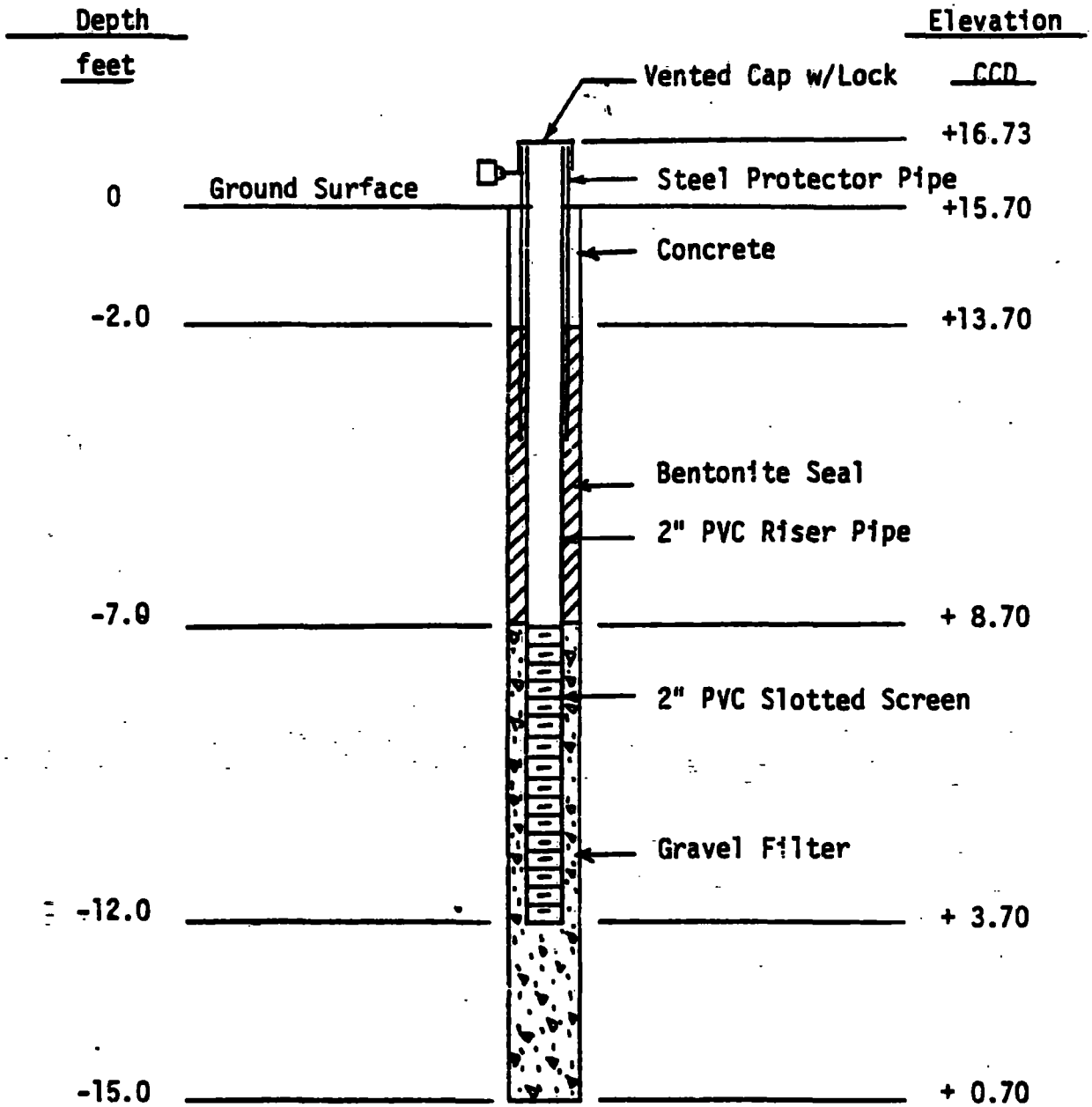
	BY MGS	CHK

WELL DETAIL

G-104



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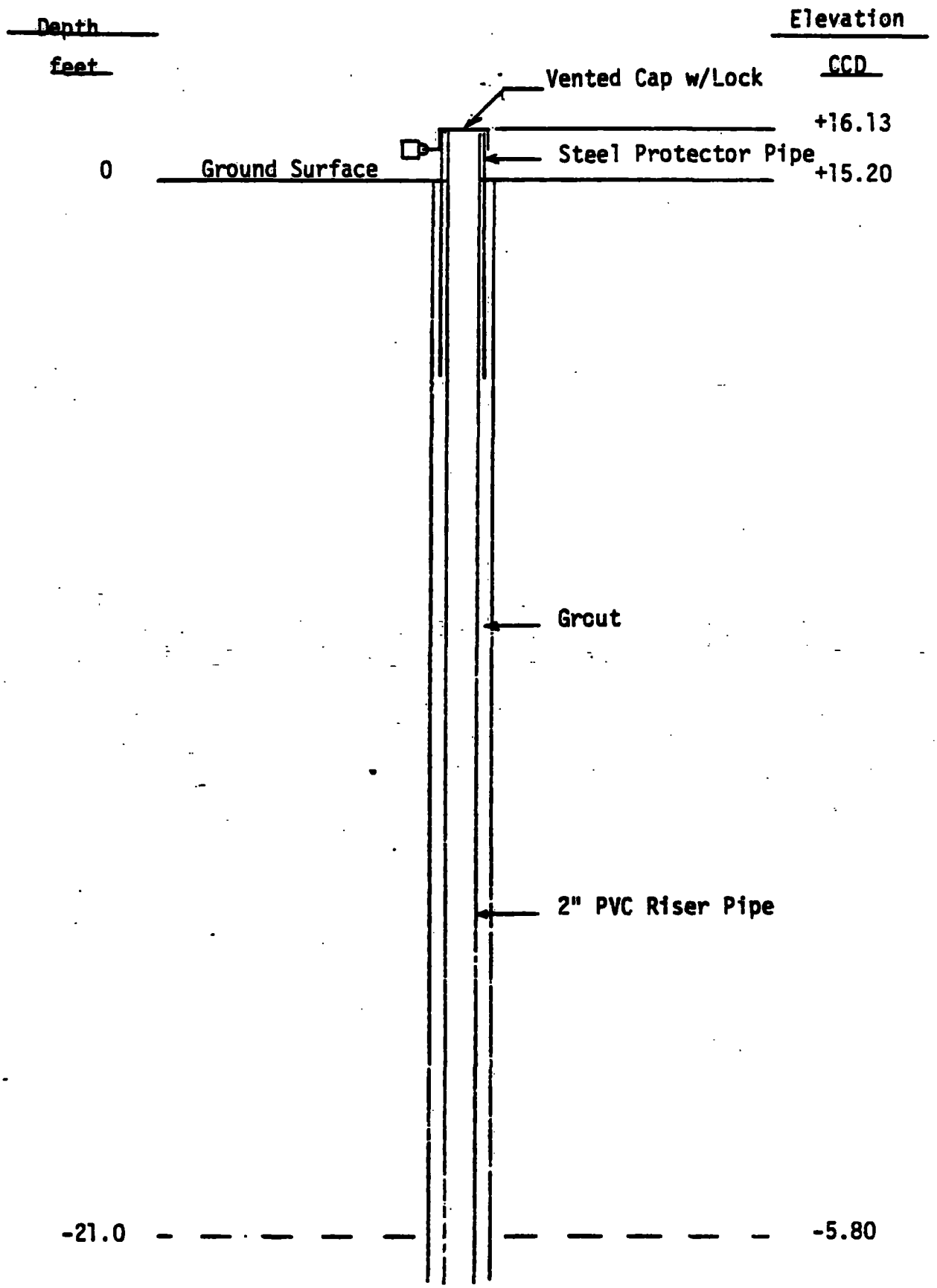
CLIENT Illinois Attorney General STS JOB NO 22063 | BY MGS | CHK ___

WELL DETAIL

G-105

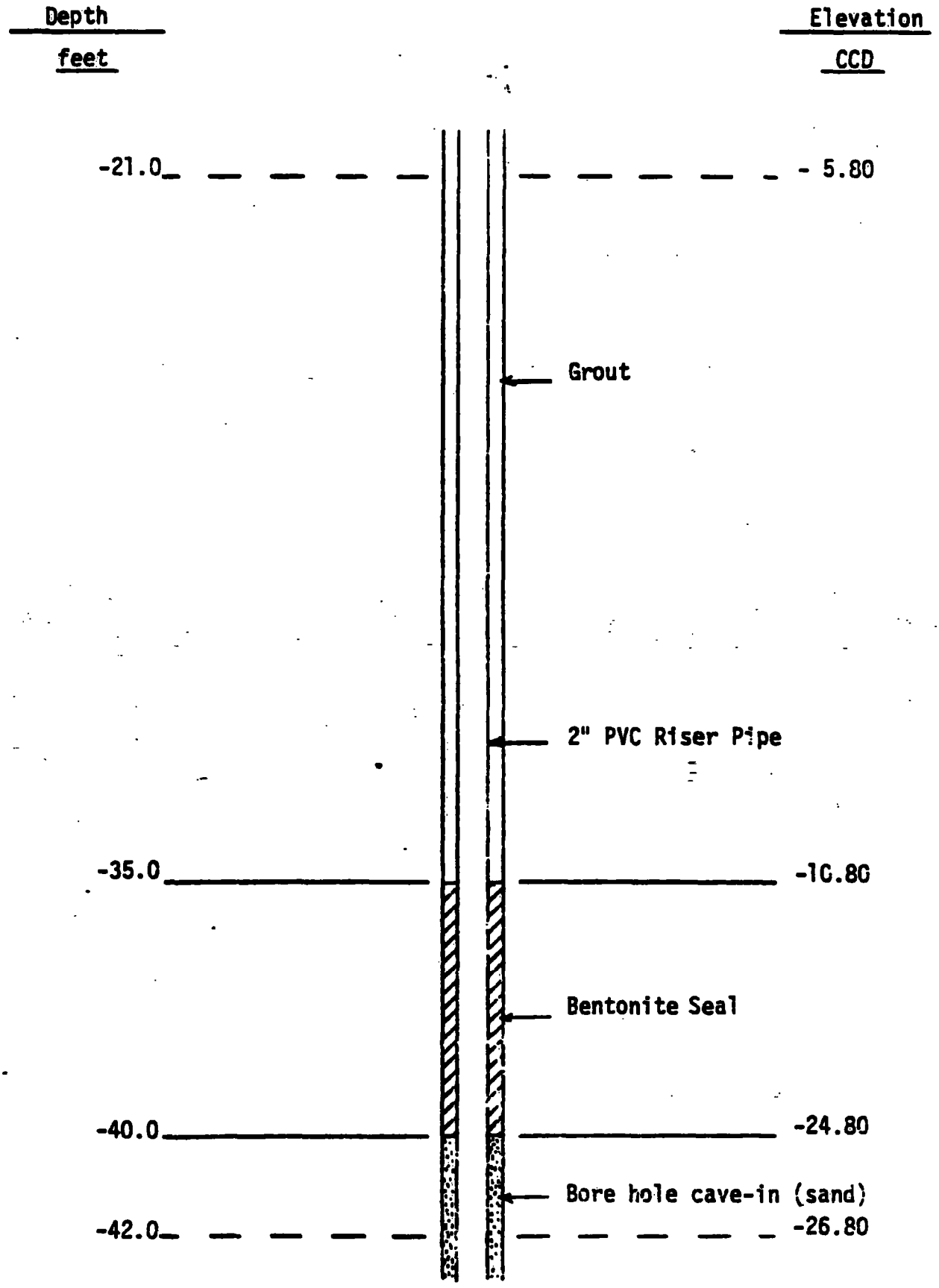


SOIL TESTING SERVICES, INC. | DATE 7/27/81 | PAGE ___ OF ___

CLIENT Illinois Attorney General STS JOB NO 22063 | BY MGS | CHK ___

WELL DETAIL (cont.)

G-105



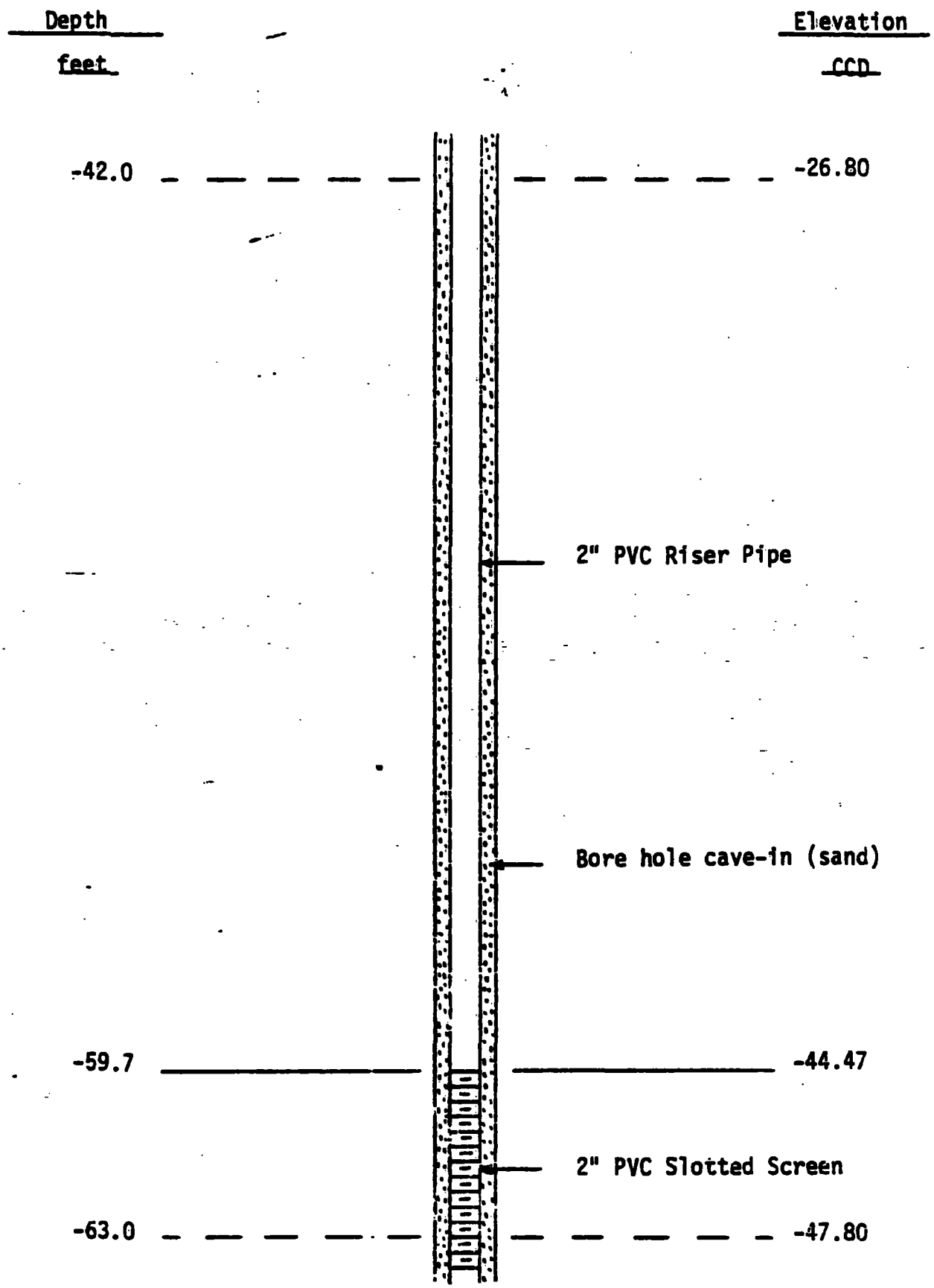
SOIL TESTING SERVICES, INC.

DATE 7/27/81 | PAGE ___ OF ___

CLIENT Illinois Attorney General STS JOB NO 22063 | BY MGS | CHK ___

WELL DETAIL (cont.)

G-105



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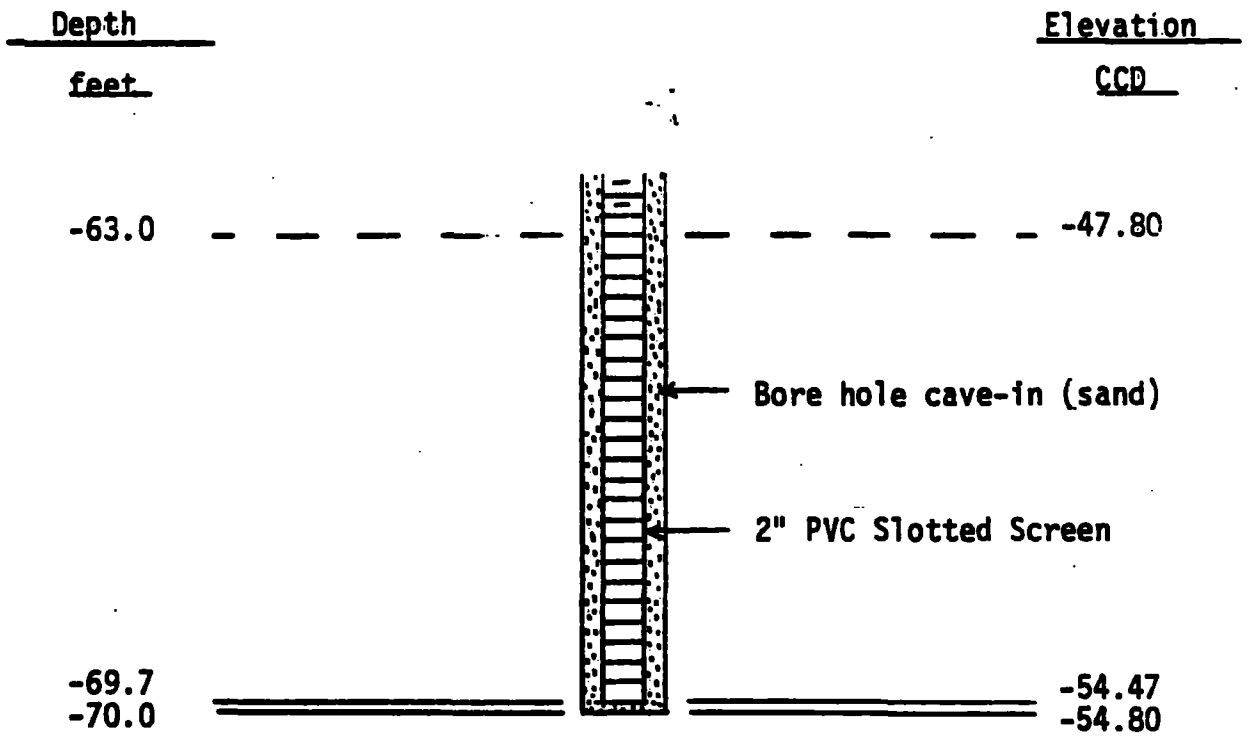
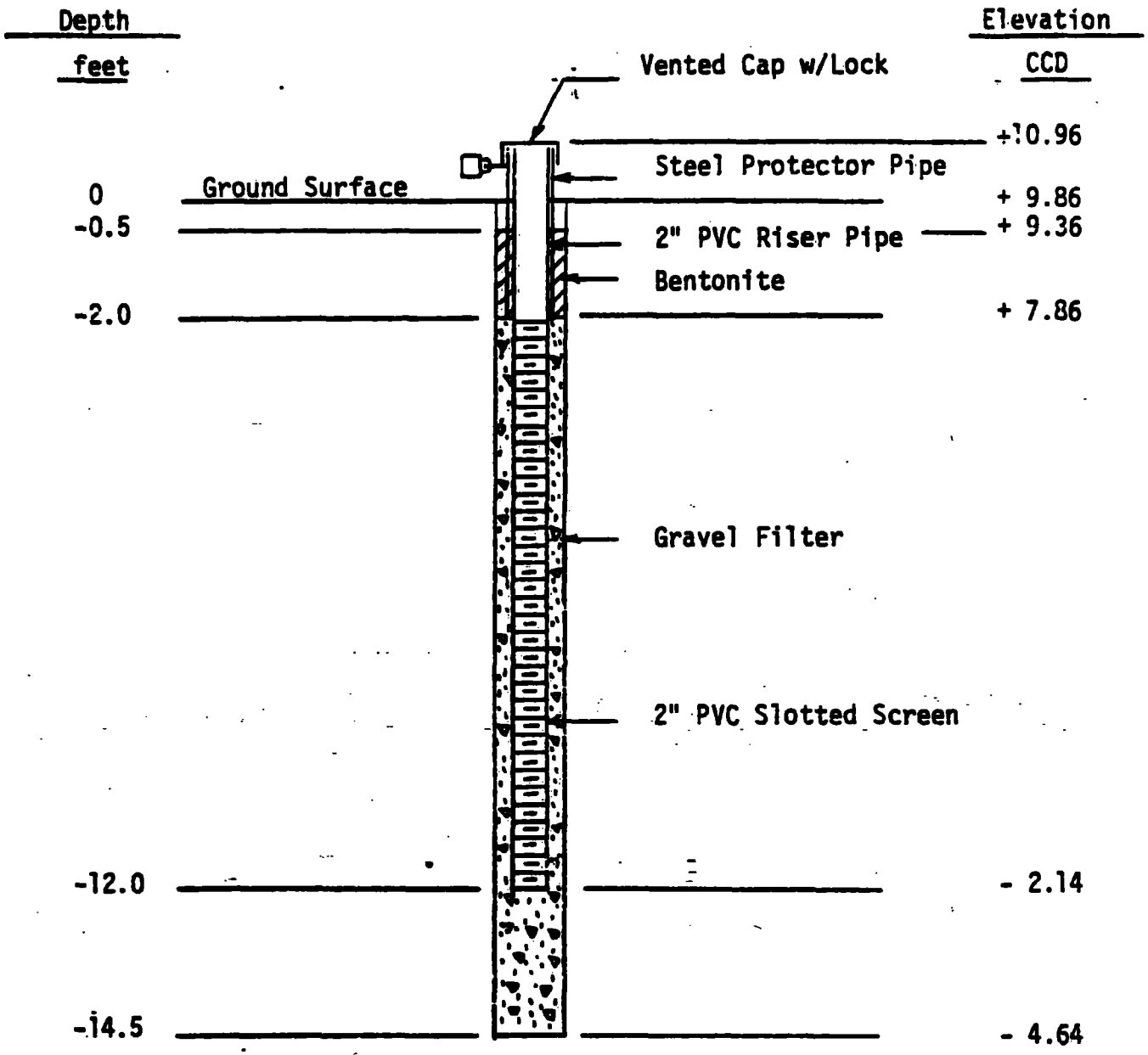


SOIL TESTING SERVICES, INC. | DATE 7/27/81 | PAGE ___ OF ___

CLIENT Illinois Attorney General | STS JOB NO 22063 | BY MGS | CHK ___

WELL DETAIL

G-106

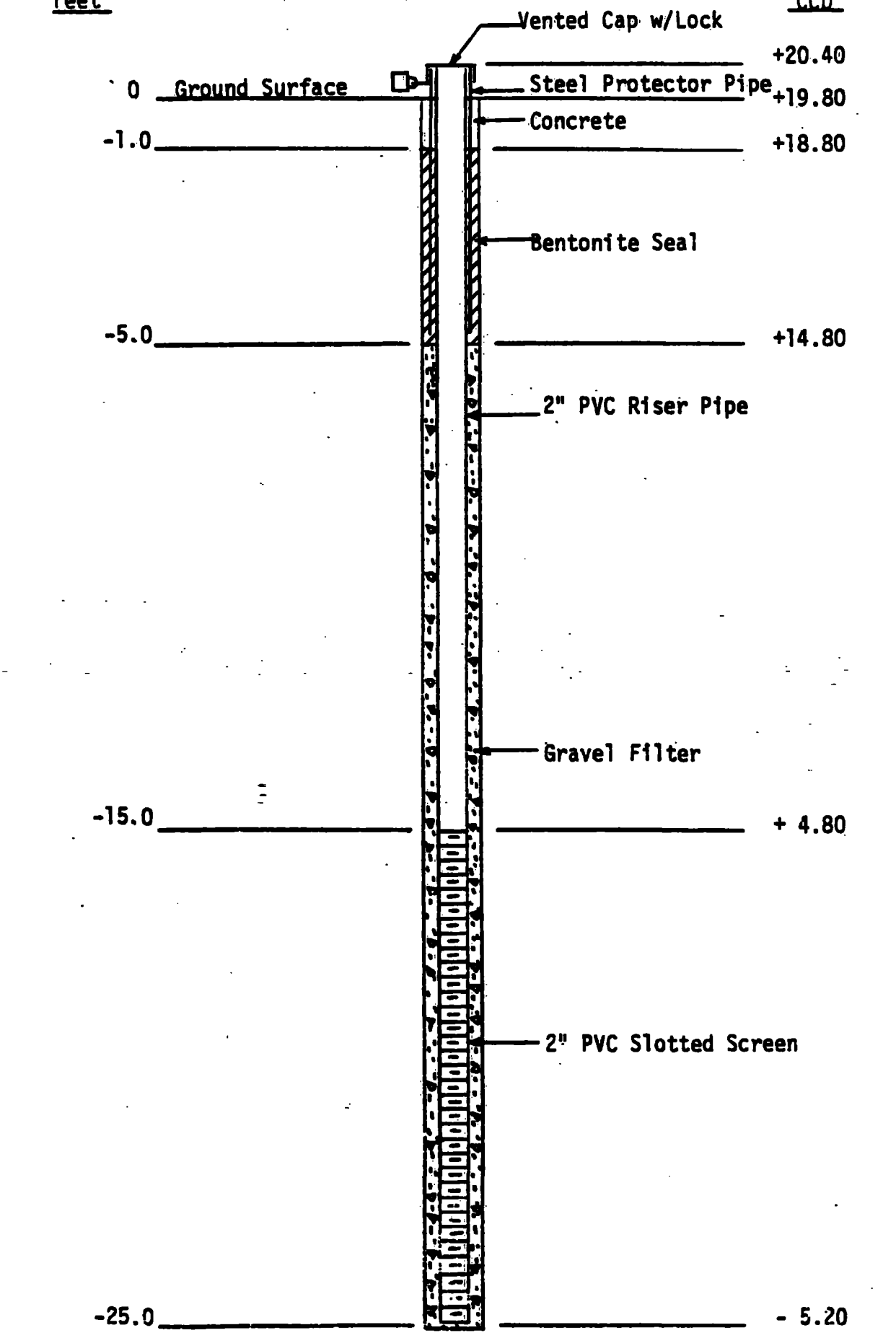


SOIL TESTING SERVICES, INC.

DATE 7/27/81 | PAGE ___ OF ___

CLIENT Illinois Attorney General STS JOB NO 22063 | BY MGS | CHK ___

WELL DETAIL
G-132

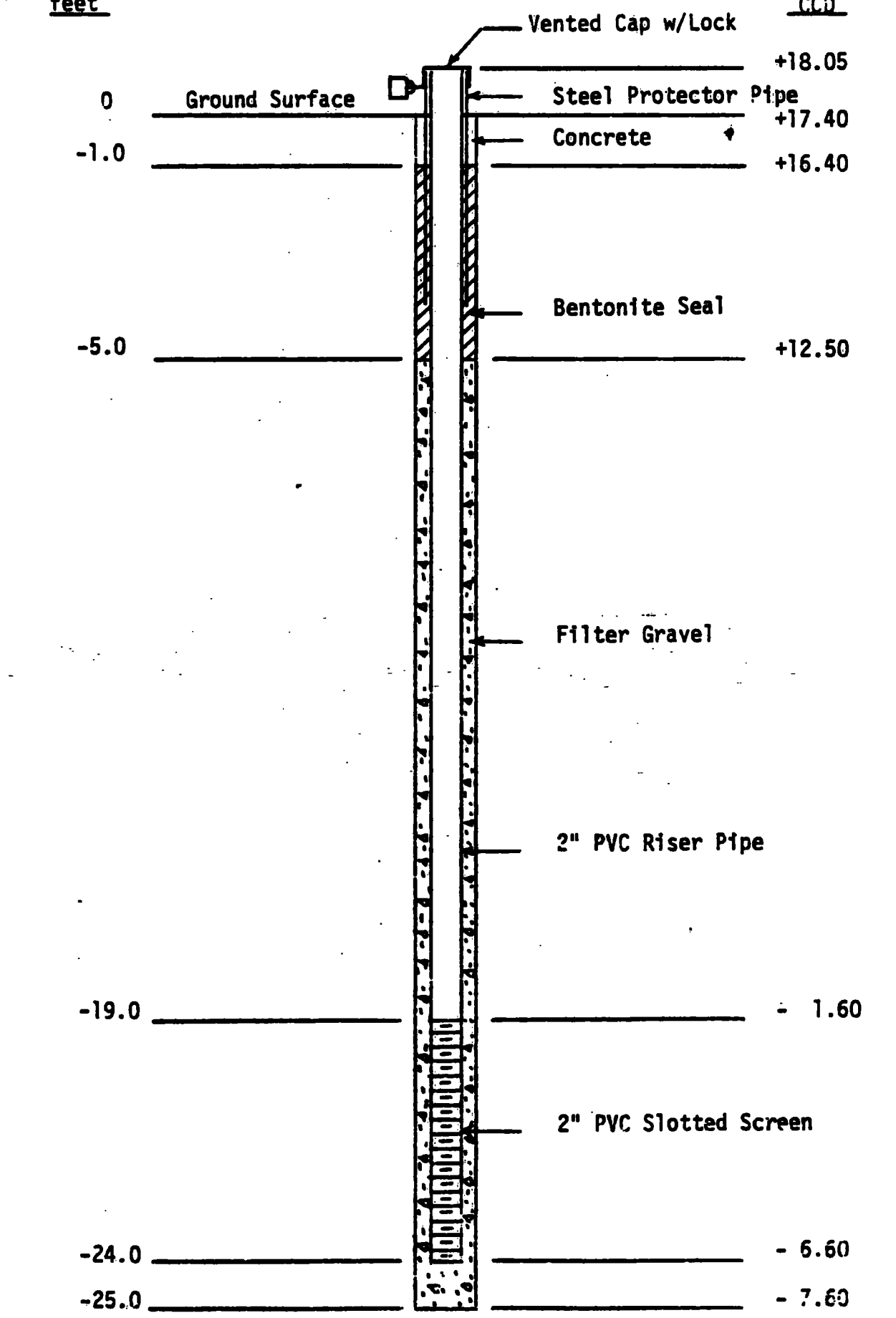


DRILLING SERVICES, INC.

DATE 7/27/81 | PAGE ___ OF ___

CLIENT Illinois Attorney General | STS JOB NO 22063 | BY MGS | CHK ___

WELL DETAIL
G-133



APPENDIX C

Test Pit Logs

OWNER	LOG OF TEST PIT
Illinois Attorney General	TP-1
PROJECT NAME	**ARCHITECT-ENGINEER**
Contamination Survey	

SITE LOCATION
Lake Calumet Area, Chicago, Illinois

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5)

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT % (10, 20, 30, 40, 50)

STANDARD PENETRATION BLOWS/FT (10, 20, 30, 40, 50)

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION	
5.0					Miscellaneous fill - wood, metal, sand, silt, large concrete blocks, metal containers - strong chemical smell (Fill)	
8.0					END OF TEST PIT	

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES IN-SITU, THE TRANSITION MAY BE GRADUAL

WL WS or WD	BORING STARTED 6/29/81	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL BCR ACR	BORING COMPLETED 6/29/81	
WL	RIG Backhoe FOREMAN Crowley	APP'D BY MGS/ms STS JOB NO. 22063

OWNER	LOG OF TEST PIT
Illinois Attorney General	TP-2
PROJECT NAME	**ARCHITECT-ENGINEER**
Contamination Survey	
SITE LOCATION	
Lake Calumet Area, Chicago, Illinois	

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5) · PLASTIC LIMIT % · WATER CONTENT % · LIQUID LIMIT % (10 20 30 40 50) · STANDARD PENETRATION BLOWS/FT (10 20 30 40 50)
SURFACE ELEVATION							
5.0					Miscellaneous fill - wood, metal, sand, silt, large concrete blocks, metal containers -strong chemical odor - oily substance encountered at 6.0 ft		
9.0					END OF TEST PIT		

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES: IN-SITU THE TRANSITION MAY BE GRADUAL

W. WS or WD	BORING STARTED 6/29/81	SOIL TESTING SERVICES, INC.
WL BCR ACR	BORING COMPLETED 6/29/81	11 PFINGSTEN ROAD
WL	RIG Backhoe FOREMAN Crowley	NORTHBROCK ILLINOIS 60062
		APP'D BY MGS/ms STS JOB NO 22963

OWNER	LOG OF TEST PIT
Illinois Attorney General	TP-3
PROJECT NAME	**ARCHITECT-ENGINEER**
Contamination Survey	
SITE LOCATION	
Lake Calumet Area, Chicago, Illinois	

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT² (1 2 3 4 5) / PLASTIC LIMIT % / WATER CONTENT % / LIQUID LIMIT % (10 20 30 40 50) / STANDARD PENETRATION BLOWS/FT (10 20 30 40 50)
					SURFACE ELEVATION		
					"A"		
					Oily material - saturated (Fill)		
3.0					Slag -white- hard (Fill)		
					END OF TEST PIT		

"A" - Cinder and slag fill -black- loose - saturated (Fill)

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES: IN-SITU THE TRANSITION MAY BE GRADUAL

WL 1.75'	WS or WD	BORING STARTED 6/29/81	SOIL TESTING SERVICES, INC.
WL	BCR	ACR	BORING COMPLETED 6/29/81	111 PFINGSTEN ROAD
WL			RIG Backhoe FOREMAN Crowley	NORTHBROOK ILLINOIS 60062
			APP'D BY MGS/ms	STS JOB NO. 22063

OWNER: Illinois Attorney General	LOG OF TEST PIT: TP-4
PROJECT NAME: Contamination Survey	ARCHITECT-ENGINEER:
SITE LOCATION: Lake Calumet Area, Chicago, Illinois	

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5) / PLASTIC LIMIT % / WATER CONTENT % / LIQUID LIMIT % (10 20 30 40 50) / STANDARD PENETRATION BLOWS/FT (10 20 30 40 50)
SURFACE ELEVATION							
					Miscellaneous fill - sand, gravel, concrete & wood - saturated at 3.5 ft (Fill)		
					Silty clay -brown and black END OF TEST PIT		

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES: IN-SITU THE TRANSITION MAY BE GRADUAL

WL WS or WD	BORING STARTED 6/29/81	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL BCR ACR	BORING COMPLETED 6/29/81	
WL	RIG Backhoe FOREMAN Crowley	APP'D BY MGS/ms STS JOB NO 22063

OWNER: Illinois Attorney General

LOG OF TEST PIT: TP-5

PROJECT NAME: Contamination Survey

ARCHITECT-ENGINEER:

SITE LOCATION: Lake Calumet Area, Chicago, Illinois

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
SURFACE ELEVATION					"A"	
2.0					Wood - saturated with black water (Fill)	
					END OF TEST PIT	
					"A" - Silty topsoil and brick fill (Fill)	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² — 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

10 20 30 40 50

STANDARD PENETRATION BLOWS/FT — 10 20 30 40 50

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES IN-SITU THE TRANSITION MAY BE GRADUAL

WL. WS or WD	BORING STARTED 6/29/81	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD
WL. BCR ACR	BORING COMPLETED 6/29/81	NORTHBROOK ILLINOIS 60062
WL.	RIG Backhoe FOREMAN Crowley	APP'D BY MGS/ms STS JOB NO. 22063

OWNER	LOG OF TEST PIT
Illinois Attorney General	TP-6
PROJECT NAME	**ARCHITECT-ENGINEER**
Contamination Survey	

SITE LOCATION
Lake Calumet Area, Chicago, Illinois

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1, 2, 3, 4, 5) / PLASTIC LIMIT % / WATER CONTENT % / LIQUID LIMIT % (10, 20, 30, 40, 50) / STANDARD PENETRATION BLOWS/FT (10, 20, 30, 40, 50)
					SURFACE ELEVATION		
					Concrete rubble, extremely dense (Fill)		
					END OF TEST PIT		

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES: IN-SITU THE TRANSITION MAY BE GRADUAL

WL WS or WD	BORING STARTED 6/29/81	SOIL TESTING SERVICES, INC. 111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL BCR ACR	BORING COMPLETED 6/29/81	
WL	RIG Backhoe FOREMAN Crowley	APP'D BY MGS/ms STS JOB NO. 22063

OWNER	LOG OF TEST PIT
Illinois Attorney General	TP-7
PROJECT NAME	**ARCHITECT-ENGINEER**
Contamination Survey	

SITE LOCATION
Lake Calumet Area, Chicago, Illinois

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
					SURFACE ELEVATION	
3.0					Miscellaneous fill - wood and concrete Saturated with black water at 2.5 feet	
					END OF TEST PIT	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² — 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

10 20 30 40 50

STANDARD PENETRATION BLOWS/FT

10 20 30 40 50

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES: IN-SITU THE TRANSITION MAY BE GRADUAL

WL 2.5'	WS or WD	BORING STARTED 6/29/81	SOIL TESTING SERVICES, INC.
WL	BCR	ACR	BORING COMPLETED 6/29/81	111 PFINGSTEN ROAD NORTHBROOK ILLINOIS 60062
WL			RIG Backhoe FOREMAN Crowley	APP'D BY MGS/ms	STS JOB NO. 22063

SL:1

OWNER	LOG OF TEST PIT
Illinois Attorney General	TP-8
PROJECT NAME	**ARCHITECT-ENGINEER**
Contamination Survey	
SITE LOCATION	
Lake Calumet Area, Chicago, Illinois	

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³
SURFACE ELEVATION						
5.0					Miscellaneous fill - concrete, rebar, electrical conduits, silt clay (Fill)	
9.0					END OF TEST PIT NOTE: Test pit performed in area of high anomaly in geophysical survey	

UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² — 1 2 3 4 5

PLASTIC LIMIT % — WATER CONTENT % — LIQUID LIMIT %

10 20 30 40 50

STANDARD PENETRATION BLOWS/FT — 10 20 30 40 50

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDRY LINES BETWEEN SOIL TYPES: IN-SITU THE TRANSITION MAY BE GRADUAL

WL Dry WS or WD	BORING STARTED 6/29/81	SOIL TESTING SERVICES, INC.
WL BCR ACR	BORING COMPLETED 6/29/81	111 PFINGSTEN ROAD
WL	RIG Backhoe FOREMAN Crowley	NORTHBROOK ILLINOIS 60062
	APP'D BY MGS/ms	STS JOB NO. 22063

OWNER
Illinois Attorney General

LOG OF TEST PIT
TP-9

PROJECT NAME
Contamination Survey

ARCHITECT-ENGINEER

SITE LOCATION
Lake Calumet Area, Chicago, Illinois

ELEVATION / DEPTH	SAMPLE NO.	SAMPLE TYPE	SAMPLE DISTANCE	RECOVERY	DESCRIPTION OF MATERIAL	UNIT DRY WT. LBS./FT.³	UNCONFINED COMPRESSIVE STRENGTH TONS/FT.² (1 2 3 4 5) / PLASTIC LIMIT % / WATER CONTENT % / LIQUID LIMIT % (10 20 30 40 50) / STANDARD PENETRATION BLOWS/FT (10 20 30 40 50)
SURFACE ELEVATION							
5.0					Miscellaneous fill - wood, concrete, steel drums, metal, etc. (Fill)		
7.0					END OF TEST PIT		

THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY LINES BETWEEN SOIL TYPES: IN-SITU THE TRANSITION MAY BE GRADUAL

WL WS or WD	BORING STARTED 6/29/81	SOIL TESTING SERVICES, INC.
WL BCR ACR	BORING COMPLETED 6/29/81	111 PFINGSTEN ROAD
WL	RIG Backhoe FOREMAN Crowley	NORTHBROOK ILLINOIS 60062
	APP'D BY MGS/ms	STS JOB NO 22063

APPENDIX D

Summary of Geophysical Data

RESISTIVITY DATA

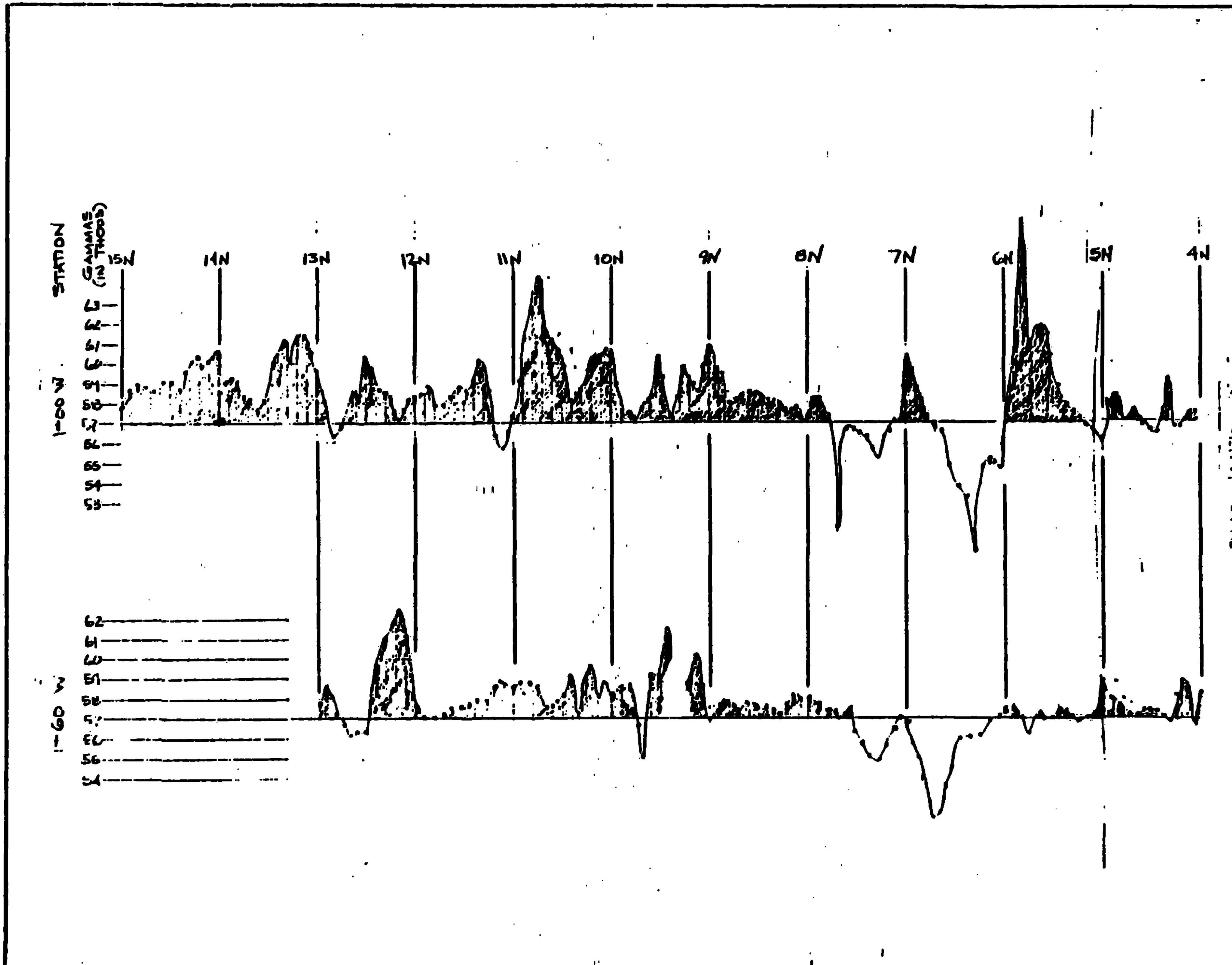
Site	Station	Direction	Approximate Depth	Internal Resistivity (ohm-ft)
Penn Central	1	N - S	2	414
			4	104
			6	67
			8	22
	2	N - S	5	189
			10	144
			15	130
			20	49
			25	15
			30	5
	2	E - W	5	226
			10	135
			15	30
			20	9
			25	21
US Scrap	1	E - W	5	188
			10	440
			15	140
	2	E - W	5	282
			15	311
			25	120
	3	N - S	5	30
			15	62

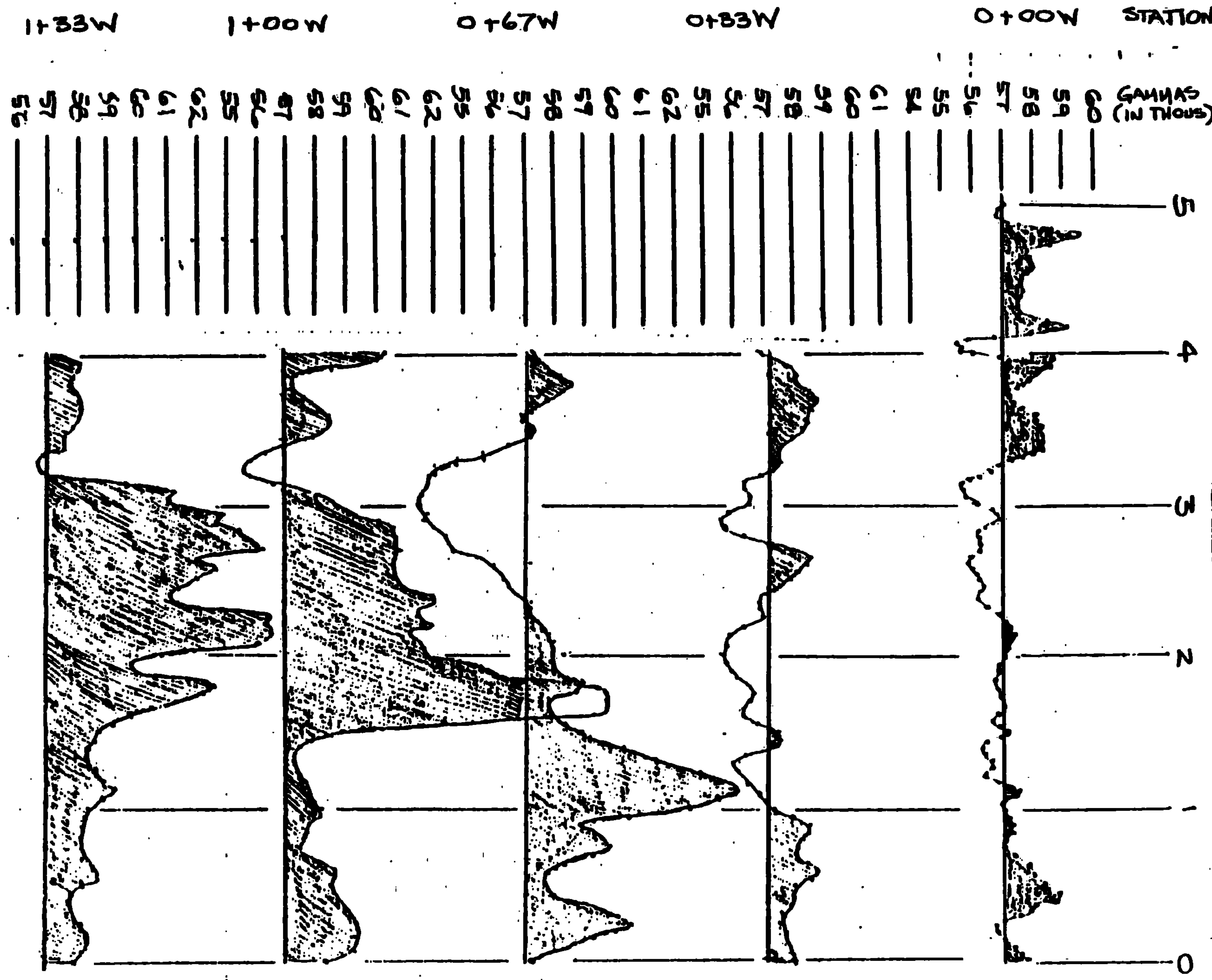
SOIL TESTING SERVICES, INC.

PROJECT ______ STS JOB NO ______

DATE ______ PAGE __ OF __

BY ______ CHK ______





PROJECT
STS JOB NO
BY
CHK
DATE
PAGE OF

APPENDIX E

Summary of Permeability Test Results

STS Job No. 22063
Project Illinois Attorney General

Date 6/24/81

SUMMARY OF PERMEABILITY TEST RESULTS

Boring No.	G-105	G-103	G-103	G-106
Sample No.	12	6	9	7
Depth (ft)	40-42	12.5-14.5	20-22	12.5-14.5
Classification	CL	CL	CL	CL
Dry Unit Weight (pcf)	123.1	105.2	109.7	117.8
Water Content%	12.8	20.8	19.3	19.0
Diameter cm	4.74	4.78	4.72	4.57
Length cm	5.06	6.87	6.98	6.81
Saturation B Value	1.0			1.0
Permeability K cm/sec	2×10^{-8}	1×10^{-8}	3×10^{-7}	3×10^{-8}

460

STATE OF ILLINOIS
DEPARTMENT OF REGISTRATION AND EDUCATION

SUMMARY OF THE GEOLOGY OF THE CHICAGO AREA

H. B. Willman

CIRCULAR 460 1971
ILLINOIS STATE GEOLOGICAL SURVEY
URBANA, ILLINOIS 61801
John C. Frye, *Chief*

Ground Water

The water supplies of the Chicago area come largely from Lake Michigan and from wells that tap ground-water resources. The smaller lakes in the area are a source of water for some communities. Artificial lakes provide limited quantities of water for local use. The rivers and streams supply little water suitable for uses other than cooling in power plants. A limited amount of water is diverted from Lake Michigan to maintain flow through the Chicago Sanitary and Ship Canal.

The ground-water resources are in four major water-yielding units, called aquifers: (1) sand and gravel beds in the glacial drift; (2) the Shallow Dolomite Aquifer, mainly the Silurian dolomite; (3) the Cambrian-Ordovician Aquifer, in which the Ironton-Galesville and Glenwood-St. Peter Sandstones are the most productive units; and (4) the Mt. Simon Aquifer, which consists of the Mt. Simon Sandstone and the basal sandstone of the Eau Claire Formation (Suter et al., 1959).

The shallow aquifers are connected hydrologically and are recharged directly by seepage from precipitation. They are separated by the relatively impervious Maquoketa Group Shale from the Cambrian-Ordovician Aquifer. The Cambrian-Ordovician Aquifer rises westward and it is recharged at the surface or through glacial deposits west of the outcrop area of the Maquoketa Group Shale along the western side of the Chicago area (fig. 9). The Cambrian-Ordovician Aquifer is separated from the Mt. Simon Aquifer by the shaly and silty beds of the Eau Claire Formation that prevent flow between the aquifers. The Mt. Simon Aquifer has a higher artesian pressure than the other aquifers, but the water quality in the eastern part of the area is not acceptable for many uses. It is recharged largely from the outcrop region of Cambrian rocks in central southern Wisconsin (fig. 1).

The Cambrian-Ordovician Aquifer has been the most highly developed bedrock aquifer. Artesian pressure in the aquifer caused the first deep well drilled in Chicago to flow with a head 80 feet above the surface, but by 1959 the water surface had declined as much as 660 feet in a cone-shaped region around the area of heaviest pumping. On the other hand, about 60 percent of the total pumpage in the area is from the two shallow aquifers, and in them there is no widespread decline in water levels.

The geology, hydrology, and resources of ground water in the Chicago area have been discussed in detail by Suter et al. (1959) and Zeizel et al. (1962).

ENGINEERING GEOLOGY

The design of buildings, roads, dams, bridges, and subways — in fact, of all kinds of structures — is dependent on the properties and variations of the geological formations on or in which they are built. Specific conditions at each site must be evaluated for the particular structure being planned. The engineering geologist may employ test drilling, rock core and soil sample studies, and in some instances geophysical logging and laboratory testing, to evaluate the geologic conditions that must be considered in design and construction.

Major engineering problems in the Chicago area have included the design of foundations for skyscrapers, most of which require excavation through 50 feet or more of glacial deposits (largely till but including water-bearing sands and boulder accumulations) to an uneven bedrock surface. Large buildings in areas of deeper drift are placed on piling, generally driven to bedrock. Glacial till provides adequate foundations for smaller buildings and most houses.

Construction of the Chicago subway involved many problems concerned with variations in the properties of the glacial drift (Peck and Reed, 1954). Similar problems are involved in highway and bridge design and in the construction of dams (W. C. Smith, 1968, 1969). Study of the variations in the glacial drift has been important in constructing foundations for the 200 BEV accelerator at the Na-

REFERENCE #8

SITE NAME Penn Central

SITE ID ILD 980600362

WELL LOGS

CONSUMER HEALTH PROTECTION, 535 WEST
61. DO NOT DETACH GEOLOGICAL/WATER
E PROPER WELL LOCATION

GEOLOGICAL AND WATER SURVEYS WELL RECORD

June 27, 1978

10. Property owner Land and Lakes Co. Well No. ____
Address 123 N. Northwest Hwy, Park Ridge, IL
Driller W. E. Wehling License No. 102-2
11. Permit No. 75892 Date 6/21/78
12. Water from ____ (Formation) 13. County Cook
at depth ____ to ____ ft.
Sec. 35
Twp. 37N
Rge. 14E
Elev. ____
14. Screen: Diam. ____ in.
Length: ____ ft. Slot ____
105' N & 1475' E of SW of Above
15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
6	galv. seamless	+1	60

SHOW LOCATION IN SECTION PLAT
105'SL, 1475'WL, SW (permit)

16. Size Hole below casing: ____ in.
17. Static level ____ ft. below casing top which is ____ ft. above ground level. Pumping level ____ ft. when pumping at ____ gpm for ____ hours.

18.

FORMATIONS PASSED THROUGH	THICKNESS	DEPTH OF BOTTOM
Drift	59	59
Lime	361	420
Lime & Shale	20	440
Shale	10	450
SS# 61651		

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

Wehling Well Works, Inc.

SIGNED W. E. Wehling DATE 7/7/78

S.S. # 61651
(0- 450')

COUNTY No. 25702

COOK

35-37N-14E

---

61. DO NOT DETACH GEOLOGICAL/WATER
E PROPER WELL LOCATION

GEOLOGICAL AND WATER SURVEYS WELL RECORD

Completed December 20, 1978

10. Property owner Brenda Brooks Well No. ____
Address [illegible] Place Chicago, IL
Driller [illegible] License No. [illegible]
11. Permit No. 87956 Date December 14, 1978
12. Water from Rock (Formation) 13. County Cook
at depth 40 to 210 ft.
Sec. 34
Twp. 37N
Rge. 14E
Elev. ____
14. Screen: Diam. ____ in.
Length: ____ ft. Slot ____
15. Casing and Liner Pipe

Diam. (in.)	Kind and Weight	From (Ft.)	To (Ft.)
5"	Black 15#	0	45

SHOW LOCATION IN SECTION PLAT
Lot #19, Maryland Subd., SE SE SE (Permit)

16. Size Hole below casing: 5 in.
17. Static level 40 ft. below casing top which is 1 ft. above ground level. Pumping level 140 ft. when pumping at 10 gpm for 4 hours.
Sub pump set at 140'

18.

FORMATIONS PASSED THROUGH	TOP	DEPTH OF BOTTOM
Top Soil	0	3
Clay	3	45
Rock	45	210

(CONTINUE ON SEPARATE SHEET IF NECESSARY)

SIGNED Phil Knierim DATE March 7, 1979

COUNTY NO. 26415

COOK

34-37N-14E

NOV 23 1982 Received

IL-0197-12
205-8303-01E
Sharon -- file

WILDMAN, HARROLD, ALLEN & DIXON

MAX WILDMAN
BERNARD HARROLD
THOMAS D. ALLEN
STEWART S. DIXON
MAURICE J. GARVEY
HOWARD T. BRINTON
SHELDON P. MIGDAL
ROBERT M. GUNN
RICHARD C. BARTLET
JERALD P. ESRICK
LENARD C. SWANSON
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WILLIAM A. HOLMQUIST
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ROBERT S. SOLOMON

COUNSEL
GEORGE W. OVERTON
HAROLD W. HUFF
LAWRENCE J. WEST
JOHN C. LOBB
KATHERYN M. DUTENHAVER

ONE IBM PLAZA
CHICAGO, ILLINOIS 60611
(312) 222-0400
CABLE: WHAD
TELEX: 206429

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SUSAN L. WALKER
ROBERT L. SHUFTAN
BRUCE I. GROGMAN
VIRGINIA A. HOVEMAN
ROBERT E. HAMILTON
WILLIAM F. HALEY
PATRICIA N. HALE
JAMES T. NYESTE
DONALD R. McGARRAH
JAMES D. PIFFER

BRUCE C. STROHM
RICHARD J. HICKEY
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ANN W. REGAN
LAWRENCE HELMS
STEVEN L. LARSON
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STANLEY V. BOYCHUCK
ROBERT A. DAHL
MARCIA B. ORR
THOMAS E. PATTERSON
CHRISTINE A. BREMER
LYN M. McHUGH
KIRK M. McINERNEY
PETER A. TOMARAS
JOAN M. FENCIK
CAROL J. BAKER
BARRY J. MILLER
DAVID S. REES
DAVID R. BARRY, JR.
STEVEN E. DANEKAS

November 22, 1982

Mr. Richard Bartlet (sic)
Region 5 Superfund Coordinator
U.S. EPA - Region 5
111 West Jackson Boulevard
Chicago, Illinois 60604

ILD 980606362

REFERENCE #9
SITE NAME Penn Central
SITE ID ILD 980606362

Dear Mr. Bartlet:

Confirming our telephone conversation of November 18, 1982, I would like to advise you that further research indicates that the notification of hazardous waste site submitted pursuant to §103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 on behalf of my client, Penn Central Corporation, with respect to the site located at 4810 East 124th Street or 12400 South Cottage Grove, Chicago, Illinois was incorrect in one respect. I would like to provide you with the information necessary for its amendment.

I am enclosing a xerox of the original form which was filed for your reference. Under Section E, as discussed on the attached sheet, a statement was made that 300,000 gallons were removed from the grain elevator in the summer of 1980 by Chemical Waste Management of Illinois. Further investigation has shown that two removal operations were conducted. Three hundred thousand gallons were removed in the initial operation. However, a second operation later removed an additional 100,000 gallons. As a result, Section E should be amended to reflect that a total of 400,000 gallons were removed from the grain elevator in the summer of 1980 by Chemical Waste Management of Illinois.

Should you wish this amendment to be in a more formal form, I would be happy to oblige. If you have any questions on this matter, please do not hesitate to contact me.

Very truly yours,

WILDMAN, HARROLD, ALLEN & DIXON

Elise E. Singer

EES/md
Enc.

Cook Co. - S.F.

EPA Notification of Hazardous Waste Site

United States Environmental Protection Agency Washington DC 20460

This initial notification information is required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 and must be mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

810609

IL 9-1-67 ILS-000-001-394

A Person Required to Notify:

Enter the name and address of the person or organization required to notify.

Name: Penn Central Corporation & Victor Palmieri & Company, Inc.

Street: 1700 Market Street

City: Philadelphia State: PA Zip Code: 19103

B Site Location:

Enter the common name (if known) and actual location of the site.

Name of Site:

Street: 810 East 124th St./12400 South Cottage Grove

City: Chicago County: Cook State: IL Zip Code: 60628

ILD980606362

C Person to Contact:

Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title): ~~Demetri~~ Konstantelos, Dometri Real Estate Manager

Phone: (312) 692-7192

D Dates of Waste Handling:

Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year): To (Year): Unknown.

(SEE ATTACHED SHEET)

E Waste Type: Choose the option you prefer to complete

Option 1: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste:
Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☐ Organics
2. ☐ Inorganics
3. ☐ Solvents
4. ☐ Pesticides
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☐ Unknown
11. ☐ Other (Specify)

(SEE D)

(SEE ATTACHED SHEET)

Source of Waste:
Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☐ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☒ Unknown (See attached sheet)
18. ☐ Other (Specify)

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

000056 JUN-981

Form Approved
OMB No. 2060-0138
EPA Form 8900-1

JUN 10 1981

Notification of Hazardous Waste Site — Side Two

F Waste Quantity:

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☐ Piles
2. ☐ Land Treatment
3. ☐ Landfill
4. ☐ Tanks
5. ☐ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☒ Other (Specify) Hexane pollutants abandoned in basement of grain elevator.

Total Facility Waste Amount

cubic feet: Unknown

gallons: 300,000 G

Total Facility Area

square feet: 49,500 S

acres:

G Known, Suspected or Likely Releases to the Environment:

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☐ Suspected ☐ Likely ☐ None

Unknown.

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

H Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

I Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

See response to D.

J Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the relationship to the site of the person required to notify. If you are not required to notify check "Other".

Name: Demetri Konstantelos
Real Estate Manager

Street: Penn Central Corporation
9501 West Devon

City: Rosemont State: IL Zip Code: 60018

Signature: [signature] Date: 6/9/87

- ☒ Owner, Present
- ☐ Owner, Past
- ☐ Transporter
- ☐ Operator, Present
- ☐ Operator, Past
- ☐ Other

D. Unknown. All disposal of wastes covered by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 at the site in question was unauthorized by Penn Central, and is believed to have been carried out during a period or periods of time when the premises were subject to lease agreements. Respondent itself has not occupied the premises for at least 15 years. A large volume of liquid waste was found in the summer of 1980 in the basement of a grain elevator formerly on the premises. The liquid waste was pumped out of the elevator at the sole expense of Penn Central in the summer of 1980. Thereafter, with the concurrence of local and state government officials, the elevator was demolished. It has been alleged by the State of Illinois that wastes may have been deposited on other portions of the premises by persons other than Penn Central Corporation employees at times unknown. Penn Central has no present knowledge of the presence of nature of such wastes.

E. The general nature of any such waste presently on the premises is unknown. (See response to D). 300,000 gallons were removed from the grain elevator in the summer of 1980 by Chemical Waste Management of Illinois. The Illinois Environmental Protection Agency required testing of this waste prior to the issuance of a disposal permit. Testing revealed that the waste was 99.4% water with .6% consisting of NA and CA salts. Additionally, the following was found in the testing: CN, 1.0 ppm; CD, 0.1 ppm; CR, 0.5 ppm; sulphide, 77.5 ppm; CU, 0.4 ppm; HG 0.1 ppm; NI, 1.0 ppm; PB, 0.1 ppm; ZN, 0.4 ppm; and PCB, less than 100 ppb.

The source or sources of these materials are unknown.

PA Notification of Hazardous

Washington DC

is initial notification information is quired by Section 103(c) of the Comprehensive Environmental Response, Compenation, and Liability Act of 1980 and must mailed by June 9, 1981.

Please type or print in ink. If you need additional space, use separate sheets of paper. Indicate the letter of the item which applies.

REFERENCE #10
SITE NAME Penn Central
SITE ID ILD980606362

erson Required to Notify:
nter the name and address of the person r organization required to notify.

Name Penn Central Corporation
% Victor Palmieri & Company, Inc.
Street 1700 Market Street
City Philadelphia State PA Zip Code 19103

Site Location:
Enter the common name (if known) and actual location of the site.

Name of Site
Street 810 East 124th St./12400 South Cottage Grove
City Chicago County Cook State IL Zip Code

Person to Contact:
Enter the name, title (if applicable), and business telephone number of the person to contact regarding information submitted on this form.

Name (Last, First and Title) Demetri Konstantelos
Real Estate Manager
Phone (312) 692-7192

Dates of Waste Handling:
Enter the years that you estimate waste treatment, storage, or disposal began and ended at the site.

From (Year) To (Year) Unknown.
(SEE ATTACHED SHEET)

Waste Type: Choose the option you prefer to complete

Option 1: Select general waste types and source categories. If you do not know the general waste types or sources, you are encouraged to describe the site in Item I—Description of Site.

General Type of Waste:
Place an X in the appropriate boxes. The categories listed overlap. Check each applicable category.

1. ☐ Organics
2. ☐ Inorganics
3. ☐ Solvents
4. ☐ Pesticides
5. ☐ Heavy metals
6. ☐ Acids
7. ☐ Bases
8. ☐ PCBs
9. ☐ Mixed Municipal Waste
10. ☐ Unknown
11. ☐ Other (Specify)

(SEE D)
(SEE ATTACHED SHEET)

Source of Waste:
Place an X in the appropriate boxes.

1. ☐ Mining
2. ☐ Construction
3. ☐ Textiles
4. ☐ Fertilizer
5. ☐ Paper/Printing
6. ☐ Leather Tanning
7. ☐ Iron/Steel Foundry
8. ☐ Chemical, General
9. ☐ Plating/Polishing
10. ☐ Military/Ammunition
11. ☐ Electrical Conductors
12. ☐ Transformers
13. ☐ Utility Companies
14. ☐ Sanitary/Refuse
15. ☐ Photofinish
16. ☐ Lab/Hospital
17. ☒ Unknown (See attached sheet)
18. ☐ Other (Specify)

Option 2: This option is available to persons familiar with the Resource Conservation and Recovery Act (RCRA) Section 3001 regulations (40 CFR Part 261).

Specific Type of Waste:
EPA has assigned a four-digit number to each hazardous waste listed in the regulations under Section 3001 of RCRA. Enter the appropriate four-digit number in the boxes provided. A copy of the list of hazardous wastes and codes can be obtained by contacting the EPA Region serving the State in which the site is located.

Form Approved
OMB No. 2000-01-18

F Waste Quantity:

Place an X in the appropriate boxes to indicate the facility types found at the site.

In the "total facility waste amount" space give the estimated combined quantity (volume) of hazardous wastes at the site using cubic feet or gallons.

In the "total facility area" space, give the estimated area size which the facilities occupy using square feet or acres.

Facility Type

1. ☐ Piles
2. ☐ Land Treatment
3. ☐ Landfill
4. ☐ Tanks
5. ☐ Impoundment
6. ☐ Underground Injection
7. ☐ Drums, Above Ground
8. ☐ Drums, Below Ground
9. ☒ Other (Specify) Hexane pollutants abandoned in basement of grain elevator.

Total Facility Waste Amount

cubic feet Unknown

gallons ~~4~~00,000 4w 11/22/82 Eth

Total Facility Area

square feet 49,500

acres

G Known, Suspected or Likely Releases to the Environment:

Place an X in the appropriate boxes to indicate any known, suspected, or likely releases of wastes to the environment.

☐ Known ☐ Suspected ☐ Likely ☐ None

Unknown.

Note: Items H and I are optional. Completing these items will assist EPA and State and local governments in locating and assessing hazardous waste sites. Although completing the items is not required, you are encouraged to do so.

H Sketch Map of Site Location: (Optional)

Sketch a map showing streets, highways, routes or other prominent landmarks near the site. Place an X on the map to indicate the site location. Draw an arrow showing the direction north. You may substitute a publishing map showing the site location.

I Description of Site: (Optional)

Describe the history and present conditions of the site. Give directions to the site and describe any nearby wells, springs, lakes, or housing. Include such information as how waste was disposed and where the waste came from. Provide any other information or comments which may help describe the site conditions.

See response to D.

J Signature and Title:

The person or authorized representative (such as plant managers, superintendents, trustees or attorneys) of persons required to notify must sign the form and provide a mailing address (if different than address in item A). For other persons providing notification, the signature is optional. Check the boxes which best describe the

Name Demetri Konstantelos
Real Estate Manager

Street Penn Central Corporation
9501 West Devon

City Rosemont State IL Zip Code 60018

☒ Owner, Present
☐ Owner, Past
☐ Transporter
☐ Operator, Present
☐ Operator, Past
☐ Other

D. Unknown. All disposal of wastes covered by the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 at the site in question was unauthorized by Penn Central, and is believed to have been carried out during a period or periods of time when the premises were subject to lease agreements. Respondent itself has not occupied the premises for at least 15 years. A large volume of liquid waste was found in the summer of 1980 in the basement of a grain elevator formerly on the premises. The liquid waste was pumped out of the elevator at the sole expense of Penn Central in the summer of 1980. Thereafter, with the concurrence of local and state government officials, the elevator was demolished. It has been alleged by the State of Illinois that wastes may have been deposited on other portions of the premises by persons other than Penn Central Corporation employees at times unknown. Penn Central has no present knowledge of the presence of nature of such wastes.

E. The general nature of any such waste presently on the premises is unknown. (See response to D). 300,000 gallons were removed from the grain elevator in the summer of 1980 by Chemical Waste Management of Illinois. The Illinois Environmental Protection Agency required testing of this waste prior to the issuance of a disposal permit. Testing revealed that the waste was 99.4% water with .6% consisting of NA and CA salts. Additionally, the following was found in the testing: CN, 1.0 ppm; CD, 0.1 ppm; CR, 0.5 ppm; sulphide, 77.5 ppm; CU, 0.4 ppm; HG 0.1 ppm; NI, 1.0 ppm; PB, 0.1 ppm; ZN, 0.4 ppm; and PCB, less than 100 ppb.

The source or sources of these materials are unknown.

REFERENCE #11
SITE NAME Penn Central
SITE ID ILD980606362

INSPECTION REPORT
FOR
PENN CENTRAL
CHICAGO, IL

ILD980606362

R05-8303-01B

JUNE 23, 1986

ecology and environment, inc.
111 WEST JACKSON BLVD., CHICAGO, ILLINOIS 60604, TEL. 312-663-9415
International Specialists in the Environment

M E M O R A N D U M

DATE: June 24, 1986
TO: File
FROM: Thomas C. Gladan
SUBJECT: Illinois/R05-8303-01B/IL0197
Chicago/Penn Central
ILD980606362

Penn Central is a 3 acre site located at 810 E. 12th Street/12400 S. Cottage Grove Avenue, Chicago, Illinois. This site was under a lease agreement from the Penn Central Railroad when all alleged dumping occurred. One of the dumping incidents involved filling the basement of an abandoned grain elevator with liquid wastes.

In 1980 (summer) the Illinois Attorney General ordered Penn Central to remove all liquid waste from the grain elevator. Total waste removed was 400,000 gallons and CD, CN, ZN, were found in samples of waste. The elevator was then demolished and the site filled in.

This site was identified by USEPA Erris Files. On June 9, 1986, the site was visited by Ecology and Environment/FIT. With the use of a property line map and surveying equipment, the exact location of the Penn Central grain elevator was determined. No samples were taken, waste type and characteristics are available from Preliminary Assessment file.

On June 11, 1986 FIT members interviewed site representatives to determine the present owner of the site and any pertinent information concerning present conditions.

11Y:5T

(1)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION
01 STATE: IL | 02 SITE NUMBER: D980606362

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
PENN CENTRAL	12400 S. COTTAGE GROVE AVE.

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG. DIST
Chicago	IL	6028	Cook	031	02

09 COORDINATES: LATITUDE 41 42 12.0 | LONGITUDE 87 36 05.0

10 TYPE OF OWNERSHIP (Check one): ☒ A. PRIVATE ☐ B. FEDERAL _____ ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER _____ ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
06 / 11-10 / 86 (MONTH DAY YEAR)	☐ ACTIVE ☒ INACTIVE	~1970 / ~1980 (BEGINNING YEAR / ENDING YEAR) ___ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply):
☐ A. EPA ☒ B. EPA CONTRACTOR Ecology & Environment (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR _____ (Name of firm)
☐ E. STATE ☐ F. STATE CONTRACTOR _____ (Name of firm) ☐ G. OTHER _____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO
THOMAS GLADAN	HYDROGEOLOGIST	E&E (FIT)	(312) 663-9415
09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO
STEVEN NELSON	Biologist	E&E (FIT)	(312) 663-9415
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
THOMAS W. McNAMERA	ATTORNEY	Jenner and Block 1 IBM PLAZA Chicago IL 60611	(312) 222-9350
THOMAS AVOLINI	President of Environmental construction	26W590 Schick Rd Bloomingdale IL	(312) 894-9000
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	12:00	PARTLY CLOUDY 70-80°F

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
Cliff Gould	Illinois EPA O.L.P.C.	(312) 345-9780

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
THOMAS GLADAN	USEPA	E&E (FIT)	(312) 663-9415	06 / 11 / 86 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

(2)

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

EPA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
IL	0980606362

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- ☐ A SOLID
- ☐ B POWDER, FINES
- ☐ C SLUDGE
- ☐ D OTHER _____ (Specify)
- ☐ E SLURRY
- ☒ F LIQUID
- ☐ G GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

- TONS _____
- CUBIC YARDS 1980.4
- NO OF DRUMS _____

03 WASTE CHARACTERISTICS (Check all that apply)

- ☒ A TOXIC
- ☐ B CORROSIVE
- ☐ C RADIOACTIVE
- ☒ D PERSISTENT
- ☐ E SOLUBLE
- ☐ F INFECTIOUS
- ☐ G FLAMMABLE
- ☐ H IGNITABLE
- ☐ I HIGHLY VOLATILE
- ☐ J EXPLOSIVE
- ☐ K REACTIVE
- ☐ L INCOMPATIBLE
- ☐ M NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE			
OLW	OILY WASTE	Unknown	-	* See below
SOL	SOLVENTS	Unknown	-	* See below
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS	Unknown	-	* See below
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently used CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
OCC	CYANIDE	7440-48-9		1.0	PPM
IOC	CADMIUM	7440-43-9		0.1	PPM
OCC	CHROMIUM	7440-47-3		0.5	PPM
OCC	SULFIDE	Unknown	PRODED LOT	77.5	PPM
IOC	MERCURY	7439-97-6	EMPTY	0.1	PPM
IOC	LEAD	7335-25-7	BASEMENT	0.1	PPM
IOC	ZINC	7733-02-0	OF GRAIN	0.4	PPM
IOC	NICKEL	7440-02-0	ELEVATOR	1.0	PPM
	* TOTAL VOLUME OF LIQUID WASTE REMOVED				
	SUMMER OF 1980	WAS 400,000 GALLONS.			

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS	NA		FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

- SITE SURVEY CONDUCTED BY FIT 6/11/86
- SAMPLE RESULTS FROM EPA SUMMER 1980

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: IL | 02 SITE NUMBER: D980606362

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ■ A. GROUNDWATER CONTAMINATION | 02 □ OBSERVED (DATE ____) | ■ POTENTIAL | □ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 30.4 | 04 NARRATIVE DESCRIPTION

SHALLOW AQUIFER IS MADE UP OF LAKE SEDIMENTS - CLAY SILT SAND.
A 20-40 FOOT THICK CLAY LAYER SEPERATES THE DEEPER DOLOMITE AQUIFER FROM THE SHALLOW AQUIFER

01 ■ B. SURFACE WATER CONTAMINATION | 02 □ OBSERVED (DATE ____) | □ POTENTIAL | □ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0 | 04 NARRATIVE DESCRIPTION

LAKE CALUMET 2,500 FEET TO THE EAST, RUNOFF DOES NOT GO TO LAKE, LAKE USE IS INDUSTRIAL

01 □ C. CONTAMINATION OF AIR | 02 □ OBSERVED (DATE: ____) | □ POTENTIAL | □ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0 | 04 NARRATIVE DESCRIPTION

THERE IS NO OBSERVED OR DOCUMENTED THREAT OF AIR CONTAMINATION

01 □ D. FIRE/EXPLOSIVE CONDITIONS | 02 □ OBSERVED (DATE ____) | □ POTENTIAL | □ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 0 | 04 NARRATIVE DESCRIPTION

THERE IS NO OBSERVED OR DOCUMENTED THREAT OF FIRE/EXPLOSIVE CONDITIONS.

01 □ E. DIRECT CONTACT | 02 □ OBSERVED (DATE ____) | ■ POTENTIAL | □ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ____ | 04 NARRATIVE DESCRIPTION

THE SITE IS SECLUDED FROM AREA RESIDENTS, HOWEVER IT IS ACCESSABLE FROM A DIRT ROAD. IEPA HAS ALL SURFACE WASTE REMOVED

01 □ F. CONTAMINATION OF SOIL | 02 □ OBSERVED (DATE ____) | ■ POTENTIAL | □ ALLEGED
03 AREA POTENTIALLY AFFECTED: 3.0 (Acres) | 04 NARRATIVE DESCRIPTION

RUNOFF MAY CARRY CONTAMINATES TO THE SORROUNDING AREA.

01 □ G. DRINKING WATER CONTAMINATION | 02 □ OBSERVED (DATE ____) | ■ POTENTIAL | □ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 30.4 | 04 NARRATIVE DESCRIPTION

POPULATION WITHIN A THREE MILE RADIOS OF SITE.
ALL OTHERS ARE ON LAKE MICHIGAN WATER (CITY OF CHICAGO)

01 □ H. WORKER EXPOSURE/INJURY | 02 □ OBSERVED (DATE: ____) | □ POTENTIAL | □ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: 0 | 04 NARRATIVE DESCRIPTION

NO WORKERS ON SITE - NOT APPLICABLE.

01 ■ I. POPULATION EXPOSURE/INJURY | 02 □ OBSERVED (DATE: ____) | □ POTENTIAL | □ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ____ | 04 NARRATIVE DESCRIPTION

SITE IS SECLUDED - ONLY MINOR POTENTIAL FOR FIRE AND EXPLOSION.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION
01 STATE: IL | 02 SITE NUMBER: 0980606362

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☒ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
NO VEGITATION EXISTS ON THE OLD GRAIN ELEVATOR FOUNDATION.

01 ☒ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include name(s) of species)
POTENTIAL FOR FAUNA EXISTS, NO EVIDENCE WAS SEEN.

01 ☒ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
DUE TO POTENTIAL FOR FLORA / FAUNA CONTAMINATION, THE POSSIBILITY OF CONTAMINATION OF FOOD CHAIN EXISTS.

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES (Spills/Runoff/Standing liquids, Leaking drums) — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
INTEGRITY OF ELEVATOR BASEMENT IS NOT KNOWN.

01 ☒ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
ALSO SHARES A COMMON BORDER AND DRAINAGE DITCH WHICH MAY CATCH SOME RUN OFF.

01 ☒ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION
NO STORM SEWERS OR DRAINS NEAR PROPERTY.

01 ☒ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☒ ALLEGED
04 NARRATIVE DESCRIPTION
ALL WASTES ARE ALLEGED TO HAVE COME FROM ILLEGAL DUMPING..
NO FENCE AROUND SITE.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS
BENZENE AND TOLUENE MAY BE ON SITE.

III. TOTAL POPULATION POTENTIALLY AFFECTED: 30.4

IV. COMMENTS

NONE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

- SAMPLE RESULTS FROM IEPA (SUMMER 1980)
- SITE INSPECTION 6/11/81 BY FIT.

EPA FORM 2070-13 (7-81)

(5)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
IL	D98 0606362

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A. NPDES				
☐ B. UIC				
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS				
☐ F. SPCC PLAN				
☐ G. STATE (Specify)				
☐ H. LOCAL (Specify)				
☐ I. OTHER (Specify)				
■ J. NONE				

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A. SURFACE IMPOUNDMENT		
☐ B. PILES		
☐ C. DRUMS, ABOVE GROUND		
☐ D. TANK, ABOVE GROUND		
☐ E. TANK, BELOW GROUND		
☐ F. LANDFILL		
☐ G. LANDFARM		
■ H. OPEN DUMP	400000	gal
☐ I. OTHER (Specify)		

04 TREATMENT (Check all that apply)

- ☐ A. INCENERATION
- ☐ B. UNDERGROUND INJECTION
- ☐ C. CHEMICAL/PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E. WASTE OIL PROCESSING
- ☐ F. SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ■ H. OTHER N/A (Specify)

05 OTHER

■ A. BUILDINGS ON SITE

NONE

06 AREA OF SITE

3.0 (Acres)

07 COMMENTS

THE SITE WAS AN OLD GRAIN ELEVATOR WITH WASTE PUMPED INTO BASEMENT. DIMENSIONS ~150' X ~100'

ELEVATOR HAS BEEN DEMOLISHED AND COVERED BY DEBRIS.

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A. ADEQUATE, SECURE ☐ B. MODERATE ■ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

INTEGRITY OF BASEMENT NOT KNOWN.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ■ YES ☐ NO

02 COMMENTS

ALL WASTE IS IN SOIL OR BELOW SURFACE.

SITE IS NOT FENCED - CONTACT IS POSSIBLE

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

- SAMPLE ANALYSIS FROM SUMMER 1980 - IEPA
- SITE INSPECTION ON 06/09/86.

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
LC	D 980606362

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)

	SURFACE	WELL
COMMUNITY	A. ■	B. □
NON-COMMUNITY	C. □	D. ■

02 STATUS

ENDANGERED	AFFECTED	MONITORED
A. □	B. □	C. □
D. ■	E. □	F. □

03 DISTANCE TO SITE

A. >3 (mi)
B. 1.4 (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

□ A. ONLY SOURCE FOR DRINKING ■ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) □ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available) □ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER 30.4

03 DISTANCE TO NEAREST DRINKING WATER WELL 1.4 (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
10 (ft)	E	45-80 (ft)	Unknown (gpd)	□ YES ■ NO

09 DESCRIPTION OF WELLS (including useage, depth, and location relative to population and buildings)

Eight homes Located 1.4 miles South, HAVE PRIVATE WELLS. THESE DRAW from the Shallow SAND AND SOLUTIAN dolomite aquifer.

10 RECHARGE AREA

■ YES □ NO

COMMENTS: Shallow Aquifer recharges from surface And precipitation

11 DISCHARGE AREA

■ YES ■ NO

COMMENTS: Also discharges into CAKE michigan

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

■ A. RESERVOIR, RECREATION DRINKING WATER SOURCE □ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES □ C. COMMERCIAL, INDUSTRIAL □ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
CAKE CALUMET	□	0.6 (mi)
Little calumet RIVER	□	1.5 (mi)
	□	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. 950 NO. OF PERSONS	B. 7,100 NO. OF PERSONS	C. 21,201 NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION

.9 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE

1,889

04 DISTANCE TO NEAREST OFF-SITE BUILDING

0.1 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

SITE IS INDUSTRIALIZED RESIDENTIAL AREAS ARE SOUTH OF SITE.

EPA FORM 2070-13 (7-81)

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

EPA

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
IL	D980606362

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A. 10^{-6} – 10^{-8} cm/sec ☐ B. 10^{-4} – 10^{-6} cm/sec ☐ C. 10^{-4} – 10^{-3} cm/sec ■ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A. IMPERMEABLE (Less than 10^{-6} cm sec) ■ B. RELATIVELY IMPERMEABLE (10^{-4} – 10^{-6} cm sec) ☐ C. RELATIVELY PERMEABLE (10^{-2} – 10^{-4} cm sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH	
40 (ft)	Unknown (ft)	6.1 TO 7.3	

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
3.75 (in)	2.43 (in)	0 %	NA	0 %

09 FLOOD POTENTIAL

SITE IS IN Unknown YEAR FLOODPLAIN

10 NA ☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE	OTHER
A. >3 (mi)	B. .1 (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)

>3 (mi)

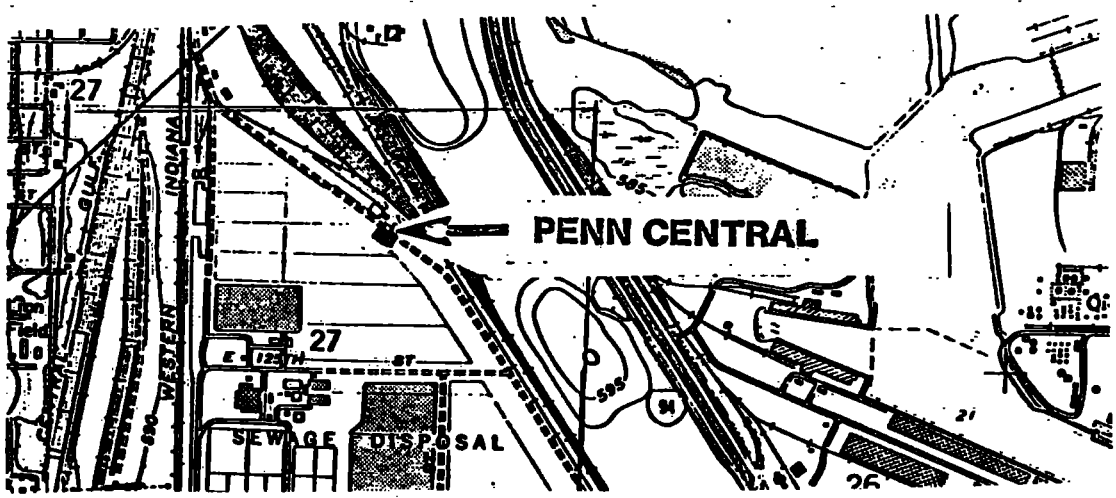
ENDANGERED SPECIES: NA

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A. 0 (mi)	B. 0.4 (mi)	C. >3.0 (mi)	D. >3.0 (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY



VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

- SITE INSPECTION performed by FIT MEMBERS on 4/11/86
- 7.5 minute topographic map of LAKE CALUMET, IL. IN MGS / PR / 1973
- US Fish and Wildlife Dept of the Interior
- Climatic Atlas of US US Dept of Interior
- Soil Survey Cook County U.S Dept of Agriculture 1979.

E&E FILE INFO (Well Logs)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 STATE: IL | 02 SITE NUMBER: D98006362

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER			

NONE

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
NONE	

IV. PHOTOGRAPHS AND MAPS

01 TYPE ■ GROUND □ AERIAL

02 IN CUSTODY OF Ekology & Environment Inc (Ei)
(Name of organization or individual)

03 MAPS ■ YES □ NO

04 LOCATION OF MAPS Ekology & Environment Ei Files

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

IEPA sample data from interior of site - grain elevator Summer 1990.

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

- Ei inspection conducted by Ei members on 6/11/1996

EPA FORM 2070-13 (7-81)

(9)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION
01 STATE: IL | 02 SITE NUMBER: 0980605362

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
EDWARD HEIL		26 W 580 Schick RD		Bloomingdale	IL	60108

PARENT COMPANY (If applicable)

08 NAME	09 D+B NUMBER	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE	12 CITY	13 STATE	14 ZIP CODE
NONE						

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
PENN CENTRAL		1700 MARKET ST.		PHILADELPHIA	PA	19103

IV. REALTY OWNER(S) (If applicable, list most recent first)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
NONE						

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

SITE SCI (UE) CONDUCTED BY FIT MEMBERS ON 06/11/86

EPA FORM 2070-13 (7-81)

10

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
IL	D980605382

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER	04 SIC CODE
N/A		
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		
05 CITY	**06 STATE**	**07 ZIP CODE**
08 YEARS OF OPERATION	**09 NAME OF OWNER**	

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME	11 D+B NUMBER	13 SIC CODE
N/A		
12 STREET ADDRESS (P.O. Box, RFD #, etc.)		
14 CITY	**15 STATE**	**16 ZIP CODE**

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

01 NAME	02 D+B NUMBER	04 SIC CODE
UNKNOWN		
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		
05 CITY	**06 STATE**	**07 ZIP CODE**
08 YEARS OF OPERATION	**09 NAME OF OWNER DURING THIS PERIOD**	

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

10 NAME	11 D+B NUMBER	13 SIC CODE
N/A		
12 STREET ADDRESS (P.O. Box, RFD #, etc.)		
14 CITY	**15 STATE**	**16 ZIP CODE**

01 NAME	02 D+B NUMBER	04 SIC CODE
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		
05 CITY	**06 STATE**	**07 ZIP CODE**
08 YEARS OF OPERATION	**09 NAME OF OWNER DURING THIS PERIOD**	

10 NAME	11 D+B NUMBER	13 SIC CODE
12 STREET ADDRESS (P.O. Box, RFD #, etc.)		
14 CITY	**15 STATE**	**16 ZIP CODE**

01 NAME	02 D+B NUMBER	04 SIC CODE
03 STREET ADDRESS (P.O. Box, RFD #, etc.)		
05 CITY	**06 STATE**	**07 ZIP CODE**
08 YEARS OF OPERATION	**09 NAME OF OWNER DURING THIS PERIOD**	

10 NAME	11 D+B NUMBER	13 SIC CODE
12 STREET ADDRESS (P.O. Box, RFD #, etc.)		
14 CITY	**15 STATE**	**16 ZIP CODE**

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

- SITE INSPECTION INTERVIEW ON 06/11/86

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
IL	D9906062 362

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
N/A	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
Unknown			
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

IV. TRANSPORTER(S) Unknown

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
Unknown			
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

SITE INSPECTION INTERVIEW ON 06/11/86

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ D. SPILLED MATERIAL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ■ G. WASTE DISPOSED ELSEWHERE — 02 DATE SUMMER 1980 — 03 AGENCY X EPA
04 DESCRIPTION
400,000 gallons of ciqoid WASTE WERE REMOVED FROM grain ELEVATOR AND DISPOSED of By chemwaste management.

01 ☐ H. ON SITE BURIAL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ L. ENCAPSULATION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
NA

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION
01 STATE: IL | 02 SITE NUMBER: D 98 0605362

II. PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ S. CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION

01 ☐ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

01 ☐ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
N/A

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

SITE INSPECTION BY E.I.T PERSONEL 6/11/86

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
PA	D990606362

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☒ YES ☐ NO

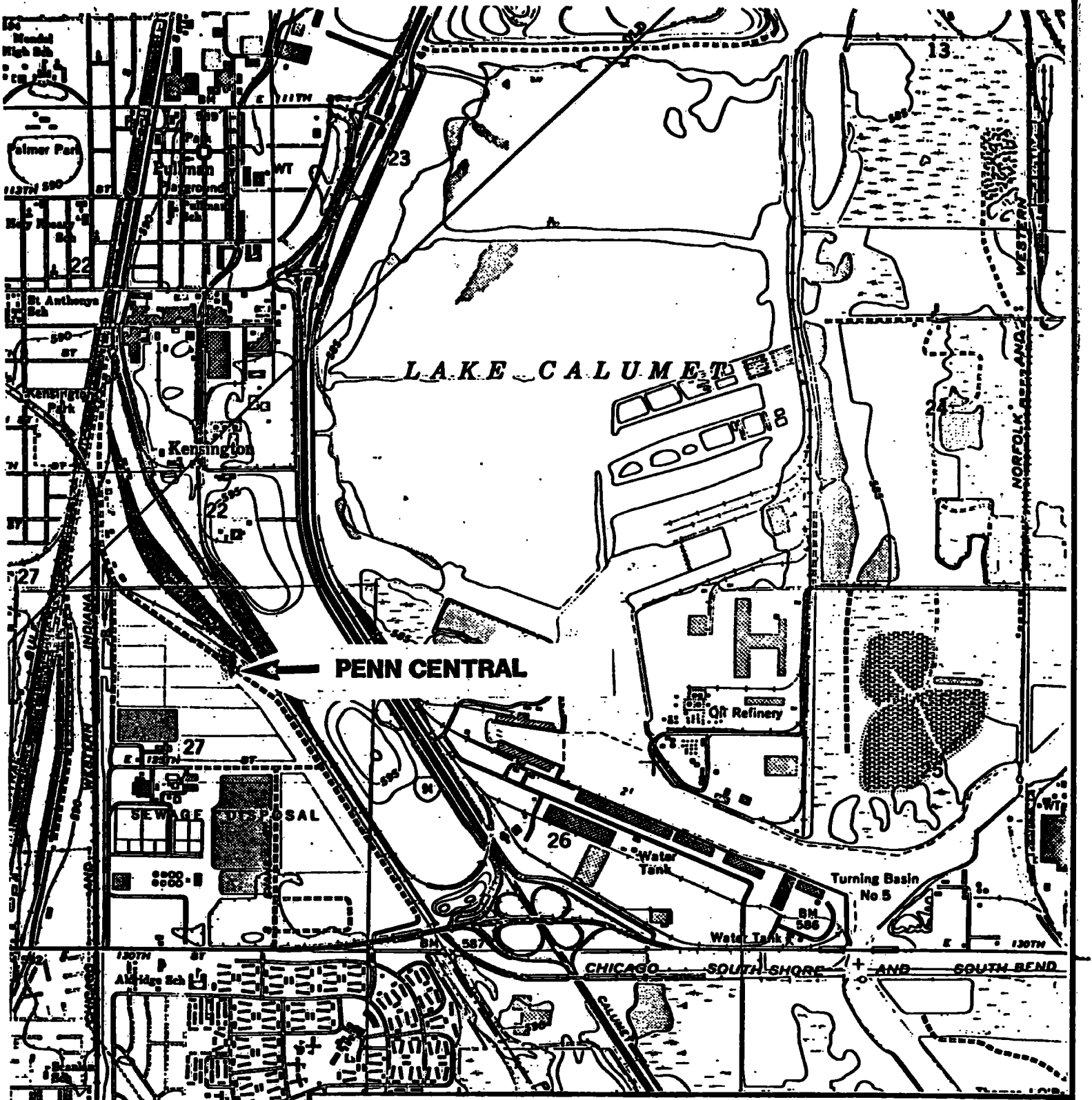
02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

IN 1990 STATE ATTORNEY GENERALS office ordered PENN CENTRAL TO REMOVE LIQUID WASTE FROM BASEMENT OF GRAIN ELEVATOR. THIS WAS done in the SUMMER OF 1990 By chemical WASTE MANAGEMENT. 400,000 gallons of WASTE WAS REMOVED.

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

SITE INSPECTION CONDUCTED BY FIT 6/A/1996

EPA FORM 2070-13 (7-81)



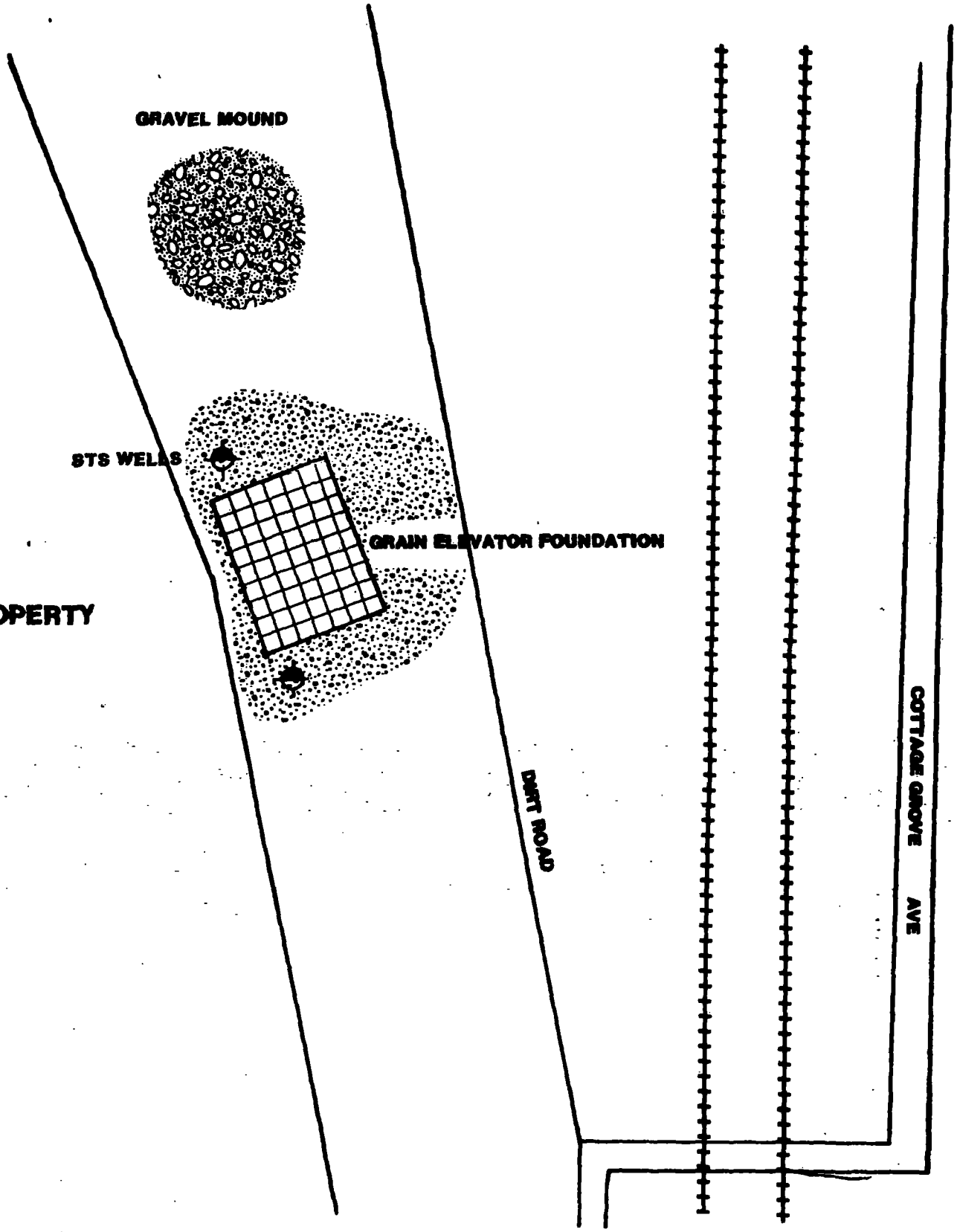
ecology and environment, inc.
111 WEST JACKSON BOULEVARD
CHICAGO, IL 60604

SCALE: 1:24000		DRAWN BY U.S.G.
DATE: 1965		REVISED 1973

Site Map- PENN CENTRAL (16)

Quadrangle: Lake Calumet, IL-IN

DRAWING NUMBER 1



ecology and environment, inc.
111 WEST JACKSON BOULEVARD
CHICAGO, IL 60604

SCALE: 1"=100'	PENN CENTRAL	DRAWN BY TCG
DATE: 8/10/86		REVISED

(17)

DRAWING NUMBER 2

Immediate Removal Action Check Sheet

	High	Moderate	Low
Fire and Explosion Hazard			
Flammable Materials — See below		X	
Explosives — Unknown			
Incompatable Chemicals — Unknown			
Direct Contact with Acutely Toxic Chemicals			
Site Security — No Fence			
Leaking Drums or Tanks — None			
Open Lagoons or pits — None			
Materials on Surface — Yes		X	
Proximity of Population — MSD workers		X	
Evidence of Casual Site Use — None			
Contaminated Water Supply			
Exceeds 10 Day Snarl — N/A			
Gross Taste or Odors — N/A			
Alternate Water Available — Yes			
Potential Contamination — Yes			
Is the site abandoned or active? Abandoned			

Comments - LAB ANAYSIS SHOWS METALS ZN, CN, CR AND FROM BRAIN ELEVATOR BASEMENT.

- 2 MONITORING WELLS EXIST - THESE SHOW BENZENE, TOUENE, XYLENE, NAPTHALENE AND PCBS

FIELD PHOTOGRAPHY LOG SHEET

DATE 3/12/86

TIME 1:30 A.M. (P.M.)

DIRECTION: N NNE (NE) ENE
E ESE SE SSE
S SSW SW WSW
W WNW NW NNW

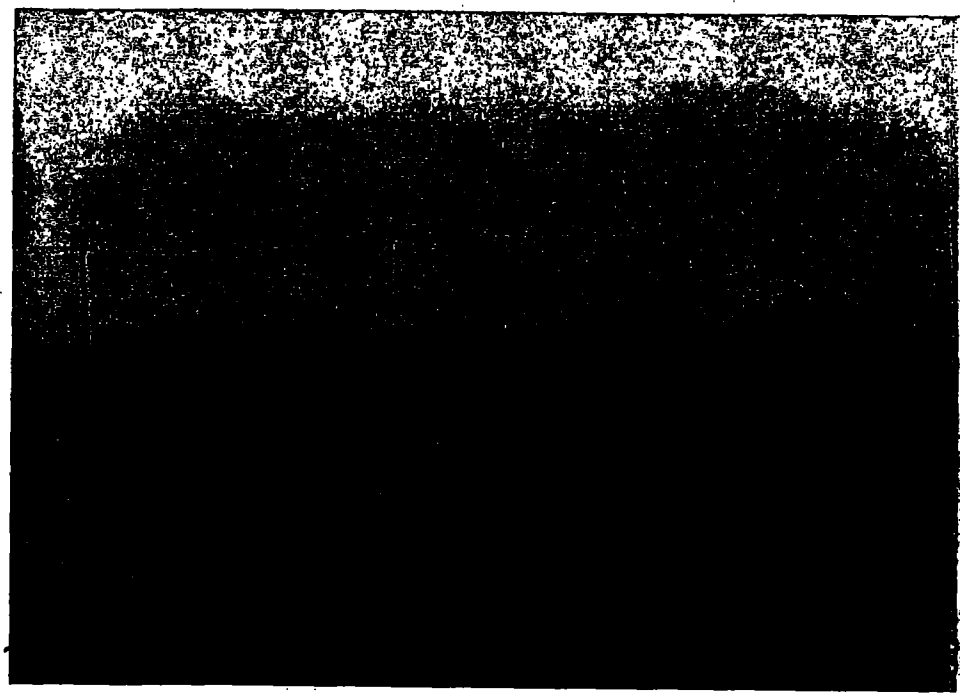
WEATHER cold cloudy

SITE PENN CENTRAL

TDD# R0543030 1B

PHOTOGRAPHED BY:
TOM GLADAN

SAMPLE ID# (if applicable)



DESCRIPTION: LEFT SIDE OF PICTURE IS LOCATION OF OLD GRAIN ELEVATOR. RIGHT SIDE SHOWS ACCESS ROAD

DATE 3/12/86

TIME 1:30 A.M. (P.M.)

DIRECTION: N NNE (NE) ENE
E ESE SE SSE
S SSW SW WSW
W WNW NW NNW

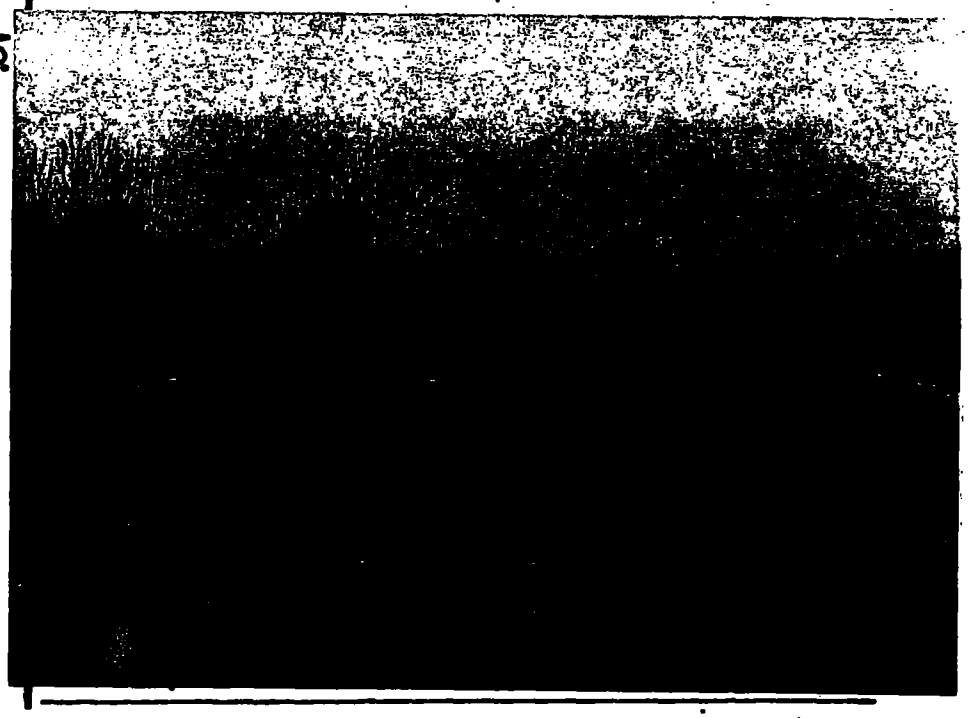
WEATHER cold cloudy

SITE PENN CENTRAL

TDD# R0543030 1B

PHOTOGRAPHED BY:
TOM GLADAN

SAMPLE ID# (if applicable)



DESCRIPTION: SITE OF OLD GRAIN ELEVATOR FOUNDATION.

FIELD PHOTOGRAPHY LOG SHEET

DATE 3/12/86

TIME 1:30 A.M. (P.M.)

DIRECTION: N NNE NE ENE
E ESE SE SSE
S SSW SW WSW
(W) WNW NW NNW

WEATHER Cold cloudy

SITE PENN CENTRAL

TDD# R05830313

PHOTOGRAPHED BY:
TOM GLADAN

SAMPLE ID# (if applicable)

DESCRIPTION: Penn Central Site (South half) looking toward MSD lagoons and plant.

DATE

TIME A.M. P.M.

DIRECTION: N NNE NE ENE
E ESE SE SSE
S SSW SW WSW
W WNW NW NNW

WEATHER

SITE

TDD#

PHOTOGRAPHED BY:

SAMPLE ID# (if applicable)

PHOTO

DESCRIPTION:

DATE 9-23-86 (Phone Log) TDD# R05-8303-01J

TIME 8:44AM

SITE Info. on Maryland Manor Subdivision for IL Water File

CONTACT Cindy Countanis - Chi. Water Dept. Public Relations Individual for Maryland Manor PHONE (312) 744-7001

REFERENCE #14

SITE NAME Penn Central

SITE ID ILD980604362

SUBJECT Info. on Maryland Manor Subdivision for IL Water File

Cindy Countanis returned my call from 8:30AM (9-23-86). I explained to Ms. Countanis that E+E is contracted to the U.S. EPA and that I am gathering background information on the municipal wells and private wells in the Chicago area. I asked Ms. Countanis if there are eight homes in the Maryland Manor Subdivision. Ms. Countanis said that she believes that there are eight homes there. The city of Chicago is still delivering bottled water to the residents in Maryland Manor. According to Ms. Countanis, they are applying for State funds to provide city water to the residents in the Maryland Manor subdivision.

Cynthia Pugh

DATE 9-23-86

DATE NOV. 27, 1985 Phone Log TDD # [illegible]

TIME 11:10 AM REFERENCE # 15 IL-0366

SITE ~~Ecology & Environment, Inc.~~ IL Water File Information SITE NAME Penn Central

SITE ID ILD980606362

CONTACT Mr. Addici PHONE (312) 744-7001

City of Chicago Water Dept.
(commissioners office)

SUBJECT

Mr. Addici said that there is no city water service for the Maryland Manor subdivision. This area consists of eight homes south of 134th Street and north of the Little Calumet River. These homes have private wells drawing from the bedrock aquifer and septic systems.

The city plans to construct a water main to that area in the future using city & federal money. It will be the home owner's responsibility to pay for construction of a line out to the street.

Contact Alderman Hutchinson 264-4900 for more information on planned construction

Sue Ryan

Date Ecology and environment 11/27/85

recycled paper

SERIAL / FACILITY / SOURCE OF SUPPLY	EST.POP. SERVED	OWN CD	START YEAR	TREAT YEAR	NO. OF SERVICES	TREATMENT CODES	IMPOUND SUP.CAP.	WELL SUP.CAP.	PLANT SUP.CAP	PUMPAGE AVG.CAP	STORAGE CAPS. GROUND	STORAGE CAPS. ELEVATED	STORAGE CAPS. TOTAL	PAY CD	MIN CHG	AMT/PER 1000 GAL	$ PER 1000 GAL LOW	$ PER 1000 GAL HIGH	MINERAL FIN	HARDNESS FIN	HARD-NO-CARB FIN	IRON FIN	FLUORIDE FIN	INSPECTION CLASS	INSPECTION DATE	OP CLASS REQUIRED	UPDATE DATE	REGION NUMBER
199005-0 BUSH																												
328 CITIES WTR CO. (ROYALTON)	501	M	1940		176		0.00	0.00	0.00	0.000	0.0	100.0	100.0	M	3.69	1.0	2.19	3.19										
							0.0	10080	01-03-85	*D*	01-85	5							550	180	124	0.50										
109015-0 BUSHNELL																												
002 ROCK WELLS	3400	M	1889	1959	1500	FN C H	0.00	2.09	1.83	0.390	119.0	100.0	219.0	M	3.50	0.7	0.55	4.67										
							3.4	32080	10-20-80	*C*	12-82	3							0	0	0	0.00										
135005-0 BUTLER																												
400 LITCHFIELD	225	M	1968		121		0.00	0.00	0.00	0.043	0.0	55.0	55.0	M	5.00	1.0	1.00	5.00										
							0.0	12080	04-06-83	*D*	05-83	3							0	0	0	0.00										
141010-0 BYRON																												
002 ROCK WELLS	2200	M	1900		871	FA C	0.00	2.60	0.00	0.460	0.0	177.0	177.0	B	6.00	5.0	0.20	1.20										
							1.1	22080	04-17-84	*C*	05-84	1							350	319	30	0.00										
053420-0 CABERY																												
002 ROCK WELLS	285	M	1885		100	FN	0.00	0.20	0.00	0.020	0.0	50.0	50.0	S	20.00	F L A T	R A T E												
							1.1	32081	05-26-83	*D*	07-83	3A							0	0	0	0.00										
163020-0 CAHOKIA																												
545 IL-AMER WTR CO. VIA CMNFLDS OF CAHOKIA	4950	M	1928		1650		0.00	0.00	0.00	0.472	0.0	0.0	0.0	M	7.15	2.0	1.70	3.58										
							0.0	30080	01-25-84	*D*	02-84	4							0	0	0	0.00										
1390-0 CAIRO WATER COMPANY	7875	P	1887	1937	2844	FA P C																						
121 INTAKE OHIO RIVER							0.00	0.00	4.00	1.750	125.0	200.0	325.0	M	6.00	4.0	0.73	2.67										
							1.1	11080	02-19-81	*A*	03-81	5							200	147	77	0.00										
159005-0 CALHOUN																												
002 ROCK WELLS	238	M	1962	1976	125	FN C	0.00	0.03	0.00	0.012	0.0	40.0	40.0	M	6.00	3.0	0.50	3.00										
							1.3	10080	11-06-81	*C*	12-81	5							760	16	0	0.00										
031039-0 CALUMET CITY																												
327 CHICAGO	39623	M	1892		11028	C	0.00	0.00	11.00	4.270	10000.0	2250.0	12250.0	Q	0.00	0.0	1.68	1.68										
							0.0	31080	04-10-81	*C*	12-82	2							0	0	0	0.00										
031042-0 CALUMET PARK	8788	M	1917		2338																							
327 CHICAGO							0.00	0.00	0.00	1.050	0.0	0.0	0.0	Q	12.53	9.0	1.21	1.39										
							0.0	32080	02-01-82	*D*	12-82	2							0	0	0	0.00										

SERIAL / FACILITY	EST.POP. SERVED	OWN CD	START YEAR	TREAT YEAR	NO. OF SERVICES	TREATMENT CODES
SOURCE OF SUPPLY	IMPOUND SUP.CAP.	WELL SUP.CAP.	PLANT SUP.CAP	PUMPAGE AVG.CAP	STORAGE CAPS. GROUND	ELEVATED	TOTAL	PAY CD	MIN CHG	AMT/PER 1000 GAL	$ PER 1000 LOW	HIGH
MINERAL FIN	HARDNESS FIN	HARD-NO-CARB FIN	IRON FIN	FLUORIDE FIN	INSPECTION INFO CLASS	DATE	OP CLASS REQUIRED	UPDATE DATE	REGION NUMBER			

137005-0 CHAPIN
012 INFILTRATION WELL (J VILLE)
552 M 1955 1955 242 FA C I
0.00 0.00 0.11 0.052 0.0 50.0 50.0 M 3.75 3.0 0.75 1.25
0 0 0 0.15 1.2 32080 01-26-81 *B* 03-81 3

029010-0 CHARLESTON
192 LAKE CHARLESTON
19400 M 1376 1970 5010 FA C L P
0.00 0.00 4.41 1.480 350.0 1500.0 1850.0 M 3.20 2.0 0.55 1.60
0 157 109 0.00 1.1 32080 08-30-83 *A* 10-83 3A

167030-0 CHATHAM
467 SPRINGFIELD
5600 M 1935 1876
0.00 0.00 0.00 0.394 1500.0 750.0 2250.0 M 6.60 2.0 1.65 3.30
0 0 0 0.00 0.0 32080 01-03-84 *D* 02-84 3

105010-0 CHATSWORTH
001 DRIFT WELLS
1200 M 1909 1942 520 I FA C
0.00 0.75 0.32 0.110 0.0 200.0 200.0 Q 6.50 4.0 1.24 1.63
510 446 96 0.02 0.9 32080 04-07-83 *B* 05-83 3A

075424-0 CHEBANSE
002 ROCK WELLS
1196 M 1949 1977 450 FA C
0.00 0.93 1.45 0.160 200.0 60.0 260.0 M 8.00 F L A T R A T E
0 0 0 0.00 0.8 12080 03-08-83 *C* 04-83 3A

113030-0 CHENOA
003 DRIFT AND ROCK WELLS
1850 M 1895 1946 780 I H FN C
0.00 0.00 0.33 0.205 100.0 200.0 300.0 M 4.00 2.0 0.55 2.00
0 0 0 0.10 2.1 32030 06-07-84 *B* 07-84 3A

011020-0 CHERRY
001 DRIFT WELLS
540 M 1911 1942 210 I FA C
0.00 0.26 0.09 0.040 37.0 75.0 112.0 Q 8.00 6.0 0.60 1.33
490 420 115 0.00 0.3 32030 10-24-84 *B* 11-84 1

157010-0 CHESTER
119 INTAKE MISSISSIPPI RIVER
6000 M 1902 1952 2206 C P FA
0.00 0.00 1.90 0.804 580.0 500.0 1080.0 M 4.80 2.0 0.80 2.40
311 127 58 0.00 0.9 10000 12-13-84 *A* 01-85 4

117020-0 CHESTERFIELD
001 DRIFT WELLS
280 M 1968 1968 115 FA C Z I
0.00 0.17 0.07 0.015 0.0 50.0 50.0 Q 8.00 1.0 1.00 8.00
538 480 466 0.42 1.3 32080 09-21-82 *B* 10-82 3

031600-0 CHICAGO
136 CHICAGO INTAKES LAKE MICHIGAN
3005072 M 1843 1964 498370 FA C P
0.00 0.00 2160.00 977.000 170000.0 0.0 170000.0 S 5.19 7.5 0.69 0.69
157 125 5 0.20 1.0 21080 06-01-81 *A* 12-82 2

SERIAL F A C I L I T Y EST.POP. OWN START TREAT NO. OF T R E A T M E N T
SERVED CD YEAR YEAR SERVICES C O D E S

S O U R C E O F S U P P L Y IMPOUND WELL PLANT PUMPAGE S T O R A G E C A P S. PAY MIN AMT/PER $ PER 1000
SUP.CAP. SUP.CAP. SUP.CAP AVG.CAP GROUND ELEVATED TOTAL CD CHG 1000 GAL LOW HIGH

MINEPAL FIN | HARDNESS FIN | HARD-NO-CARB FIN | I R O N FIN | FLUORIDE FIN | INSPECTION INFO CLASS DATE | OP CLASS REQUIRED | UPDATE DATE | REGION NUMBER

049015-0 DIETERICH — 840 M 1953 1980 240 C Z I
001 DRIFT WELLS — 0.00 0.04 0.08 0.043 0.0 50.0 50.0 M 4.00 2.0 1.75 1.75
0 197 0 0.60 0.0 32080 05-25-83 *B* 07-83 5

167045-0 DIVERNON — 1000 M 1935 430
301 ADGPTV WTR COMM — 0.00 0.00 0.00 0.067 0.0 60.0 60.0 M 4.00 2.0 1.00 2.00
0 0 0 0.00 0.0 32080 09-11-80 *D* 11-80 3

031066-0 DIXMOOR — 4750 M 1927 729
516 CHGO VIA HARVEY — 0.00 0.00 0.00 0.639 0.0 0.0 0.0 Q 10.00 3.6 2.78 3.20
0 0 0 0.00 0.0 31080 01-11-82 *D* 12-82 2

103020-0 DIXON — 15700 M 1883 5228 FA C
002 ROCK WELLS — 0.00 7.63 0.00 2.140 1025.0 750.0 1775.0 M 2.30 F L A T R A T E
350 330 10 0.60 1.3 22080 03-06-84 *C* 04-84 1

031069-0 DOLTON — 24766 M 1894 7344 C
327 CHICAGO — 0.00 0.00 12.10 3.250 5000.0 1000.0 6000.0 Q 10.38 7.4 1.38 1.84
0 0 0 0.00 0.0 31080 02-23-81 *C* 12-82 2

1810 0 DONGOLA — 786 M 1936 1964 460 FA C P
032 DONGOLA RESERVOIR AND ROCK WELLS — 0.00 0.00 0.00 0.121 30.0 60.0 90.0 M 3.00 3.0 0.50 1.00
0 0 0 0.00 0.0 32080 12-05-84 *A* 01-85 5

005436-0 DONNELLSON — 345 M 1969 115 C
361 GREENVILLE — 0.00 0.00 0.00 0.017 0.0 50.0 50.0 M 8.00 2.0 3.50 4.00
0 0 0 0.00 0.0 32083 03-19-84 *C* 04-84 4

075040-0 DONOVAN — 325 M 1904 150 PP FA C
001 DRIFT WELLS — 0.00 0.17 0.00 0.029 0.0 *13.5 13.5 B 6.00 1.6 0.71 1.60
307 147 0 0.61 1.0 32080 04-26-83 *C* 06-83 3A

117023-0 DORCHESTER — 600 M 1972 160
536 GILLESPIE VIA BENLD — 0.00 0.00 0.00 0.036 0.0 50.0 50.0 M 5.50 1.0 1.25 5.50
0 0 0 0.00 0.0 10080 08-22-84 *D* 09-84 3

041515-0 DOUGLAS COUNTY EGYPTIAN TRAIL WTR CORP — 55 P 1979 23
532 DOUGLAS WTR CO. (TUSCOLA) — 0.00 0.00 0.00 0.001 0.0 0.0 0.0 0.0 0.00 0.0 0.00 0.00
0 0 0 0.00 0.0 12080 11-30-84 *D* 01-85 3A

SERIAL / FACILITY / SOURCE OF SUPPLY	EST.POP. SERVED	OWN CD	START YEAR	TREAT YEAR	NO. OF SERVICES	TREATMENT CODES	IMPOUND SUP.CAP.	WELL SUP.CAP.	PLANT SUP.CAP	PUMPAGE AVG.CAP	GROUND STORAGE CAPS.	ELEVATED STORAGE CAPS.	TOTAL STORAGE CAPS.	PAY CD	MIN CHG	AMT/PER 1000 GAL	$ PER 1000 GAL LOW	$ PER 1000 GAL HIGH	MINERAL FIN	HARDNESS FIN	HARD-NO-CARB FIN	IRON FIN	FLUORIDE FIN	INSPECTION CLASS	INSPECTION DATE	OP REQUIRED	CLASS UPDATE DATE	REGION NUMBER
059030-0 RIDGWAY	2275	M	1939		650	FA C Z I																						
001 DRIFT WELLS							0.00	0.23	0.13	0.060	0.0	40.0	40.0	M	1.60	1.0	0.80	1.60										
430	133			0		0.02	0.8	21080	05-21-82	*B*	05-80	5																
095045-0 RIO	252	M	1958		110	H C FN																						
002 ROCK WELLS							0.00	0.28	0.00	0.019	0.0	100.0	100.0	M	7.50	1.0	2.20	7.50										
0	0			0		0.00	2.6	12080	08-03-82	*C*	12-82	3																
009015-0 RIPLEY	150	M	1976		75	C																						
528 CLAYTON-CAMP POINT VIA MT STERLING							0.00	0.00	0.00	0.009	0.0	0.0	0.0	M	6.00	2.0	3.00	3.00										
0	0			0		0.00	0.0	32185	03-28-84	*C*	05-84	3																
031261-0 RIVER FOREST	13392	M	1893		3123	C																						
327 CHICAGO							0.00	0.00	11.80	1.510	2500.0	0.0	2500.0	Q	10.00	5.3	1.84	1.84										
0	0			0		0.00	0.0	31030	02-13-81	*C*	12-82	2																
031264-0 RIVER GROVE	10368	M	1924		2640	C																						
327 CHICAGO							0.00	0.00	6.20	1.570	1250.0	500.0	1750.0	Q	8.00	4.4	1.80	1.80										
0	0			0		0.00	0.0	21080	05-22-81	*C*	12-82	2																
031258-0 RIVERDALE	13233	M	1902		3904	C																						
327 CHICAGO							0.00	0.00	13.00	3.130	3500.0	0.0	3500.0		5.00	3.8	1.30	1.30										
0	0			0		0.00	0.0	31081	11-21-80	*C*	12-82	2																
031267-0 RIVERSIDE	9240	M	1870		3300	C PP																						
805 CHGO VIA BRKFLD-N RVRSIDE WC &ROCK WELLS							0.00	0.00	9.72	0.936	1350.0	400.0	1750.0	Q	15.50	7.5	2.06	2.06										
0	0			0		0.00	0.0	31080	03-09-81	*C*	12-82	2																
167095-0 RIVERTON	3000	M	1936	1979	1292	FA C Z I																						
001 DRIFT WELLS							0.00	1.06	0.93	0.257	0.0	350.0	350.0	M	7.50	2.0	2.95	3.75										
0	130			89		0.00	1.0	32080	09-04-84	*B*	10-84	3																
097145-0 RIVERWOODS	500	M	1957		124																							
542 HIGHLAND PK VIA DEERFIELD							0.00	0.00	0.00	0.088	0.0	0.0	0.0	Q	40.00	40.0	1.00	1.00										
0	0			0		0.00	0.0	31080	11-18-81	*D*	06-83	2																
097145-1 RIVERWOODS SPEC SERV DIST 3	300	M	1981		11	FA PP C																						
001 DRIFT WELLS							0.00	0.28	2.88	0.000	120.0	*5.0	125.0	Q	20.00	20.0	1.00	1.00										
0	0			0		0.00	0.0	31080	11-18-81	*C*	11-82	2																

SERIAL / FACILITY	EST.POP. SERVED	OWN CD	START YEAR	TREAT YEAR	NO. OF SERVICES	TREATMENT CODES
SOURCE OF SUPPLY	IMPOUND SUP.CAP.	WELL SUP.CAP.	PLANT SUP.CAP	PUMPAGE AVG.CAP	STORAGE GROUND	STORAGE ELEVATED	STORAGE TOTAL	PAY CD	MIN CHG	AMT/PER 1000 GAL	$ PER 1000 GAL LOW	$ PER 1000 GAL HIGH
MINERAL FIN	HARDNESS FIN	HARD-NO-CARB FIN	IRON FIN	FLUORIDE FIN	INSPECTION CLASS	INSPECTION DATE	OP REQUIRED	CLASS UPDATE DATE	REGION NUMBER			

167125-0 THAYER
301 ADGPTV WTR COMM
0 0 0 0.00 0.00 0.0 0.00 22080 09-11-80 0.046 *D* 850 M 1942 0.0 10-80 3 0.0 330 0.0 M 3.75 2.0 1.40 1.88

003015-0 THEBES
002 ROCK WELLS
443 319 0 0.10 0.00 1.1 0.08 10081 12-18-84 0.030 *C* 525 M 1929 77.0 01-85 5 40.0 150 117.0 M FA C 5.00 2.5 0.40 1.25

019095-0 THOMASBORO
001 DRIFT WELLS
0 0 0 0.10 0.00 1.1 0.60 12000 06-14-84 0.138 *B* 1170 M 1961 0.0 07-84 3A 100.0 425 100.0 M FA C I 5.00 FLAT RATE

055050-0 THOMPSONVILLE
585 REND LAKE VIA W FRANKFORT
0 0 0 0.00 0.00 0.0 0.00 10080 12-03-84 0.040 *D* 885 M 1968 0.0 12-84 5 40.0 253 40.0 M 6.30 2.0 1.45 0.90

015035-0 THOMSON
001 DRIFT WELLS
310 215 45 1.98 0.00 0.9 0.43 22080 05-17-84 0.065 *C* 911 M 1903 0.0 06-84 1 16.0 150 16.0 S PP FA C 15.00 6.0 0.95 2.50

031309-0 THORNTON
327 CHICAGO
0 0 0 0.00 0.00 0.0 3.02 21080 07-30-82 0.434 *C* 3022 M 1925 430.0 06-83 2 500.0 973 930.0 B C 0.00 0.0 2.55 2.55

157070-0 TILDEN
388 KASKASKIA WTR DIST
0 0 0 0.00 0.00 1.0 0.00 12080 08-13-84 0.080 *D* 1100 M 1952 0.0 09-84 4 30.0 523 30.0 M 6.00 2.0 2.65 3.00

031491-0 TINLEY PARK
523 CHGO VIA OAK LAWN
0 0 0 0.00 0.00 0.0 15.60 10080 02-06-81 2.450 *C* 26171 M 1917 10000.0 06-83 2 1500.0 6843 11500.0 Q FA C 21.24 12.0 1.77 1.77

011105-0 TISKILWA
001 DRIFT WELLS
420 350 0 0.40 0.00 1.0 0.45 11080 09-05-84 0.080 *B* 990 M 1906 1977 1.2 11-84 1 45.0 365 46.2 M FA C I 1.50 0.5 3.00 2.00

035020-0 TOLEDO
001 DRIFT WELLS
0 203 0 0.60 0.00 0.7 0.45 32000 03-22-84 0.082 *B* 1284 M 1889 1977 0.0 05-84 3A 250.0 556 250.0 M FA C I Z 4.00 2.0 1.45 2.00

RS-8303-1E

From:
IL Water File

Information -
Ecology and Environment, Inc.

July 16, 1984
1:15 pm

REFERENCE #17
SITE NAME Penn Central
SITE ID ILD980606362

Sue Ryan called Ralph Falkenfall (City of Chicago Water Department) 744-7001

M. Falkenfall confirmed that the following suburbs are on Chicago water, which is Lake Michigan water:

Riverdale	Dixmoor
Harvey	Markham
Blue Island	Midlothian
Calumet Park	Calumet City
Phoenix	Dolton
Robbins	South Holland
Posen	Lansing (gets H_2O from Hammond (lake H_2O))

Sue Ryan
7-16-84

REFERENCE #19
SITE NAME Penn Central
SITE ID ILD980606362

ILLINOIS

LISTED SPECIES

Mammals	Habitat	Distribution
Indiana Bat (E) *Myotis sodalis*	Caves and Riparian Habitat	Statewide
Gray Bat (E) *Myotis grisescens*	Caves	Hardin, Pike, Pope Counties
Birds		
Bald Eagle (E) *Haliaeetus leucocephalus*	Breeding	Alexander, Jefferson, Jo Daviess, Pulaski, Williamson Counties
	Wintering	Adams, Alexander, Brown, Bureau, Calhoun, Carroll, Cass, Christian, Clinton, DeWitt, Fayette, Franklin, Fulton, Greene, Grundy, Hancock, Henderson, Jackson, Jefferson, Jersey, JoDaviess, Johnson, LaSalle, Madison, Marshall, Mason, McHenry, Menard, Mercer, Monroe, Morgan, Ogle, Peoria, Pike, Pulaski, Putnam, Randolph, Rock Island, Sangamon, Schuyler, Scott, Shelby, St. Clair, Tazewell, Union, Wabash, White, Whiteside, Will, Winnebago, Williamson, Woodford Counties
Mussels		
Higgins' Eye Pearly Mussel (E) *Lampsilis higginsi*	Rivers	Mississippi and Illinois Rivers
Orange-footed Pimpleback Mussel (E) *Plethobasis cooperianus*	Rivers	Wabash River
Pink Mucket Pearly Mussel (E) *Lampsilis orbiculata*	Rivers	Wabash, Ohio, Illinois, Rivers
Rough Pigtoe Pearly Mussel (E) *Pleurobema plenum*	Rivers	Ohio and Wabash Rivers

ILLINOIS (Cont.)

Mussels	Habitat	Distribution
Tuberculed-blossom Pearly Mussel (E) *Epioblasma (-Dysnomia) torulosa torulosa*	Rivers	Lower Ohio and Wabash Rivers
White Cat's Paw Pearly Mussel (E) *Epioblasma obliquata perobliqua*	Rivers	Wabash River
White Wartyback Pearly Mussel (E) *Plethobasis cicatricosus*	Rivers	Ohio and Wabash Rivers

Plants

Small Whorled Pogonia (E) *Isotria medeoloides*	Dry Woodland	Randolph County

INDIANA BAT

Myotis sodalis (Miller and Allen)

Order: Chiroptera

Family: Vespertilionidae

Description: A medium-size myotis, closely resembling the little brown bat (Myotis lucifugus) but differing in coloration, the fur being a dull grayish chestnut rather than bronze, with the basal portion of the hairs of the back dull lead colored; coloration of underparts pinkish to cinnamon, hind feet smaller and more delicate than in M. lucifugus; calcar strongly keeled.

Distribution: Midwest and eastern United States from the western edge of Ozark region in Oklahoma to central Vermont, to southern Wisconsin, and as far south as northern Florida. Distribution is associated with major cavernous limestone areas and areas just north of cave regions. (Hall, 1962).

Former Distribution: Probably about the same, although there is evidence that many caves within the range of the species have been abandoned since 1950.

Status: Endangered. Decreasing in numbers.

Estimated numbers: About 500,000.

Breeding rate in the wild: Usually a single young in late June.

Reasons for decline: Commercialization of caves in which Indiana bats roost. Wanton destruction of large numbers of Indiana bats by vandals. (John S. Hall reported in personal communication, 1965, that a few years ago two boys killed about 10,000 Myotis sodalis in Carter Cave, Kentucky, in just a few minutes.) Roosts being disturbed by increasing numbers of spelunkers and others seeking recreation. Disturbances during bat banding programs. Colonies frequently raided for laboratory experimental animals. Insecticide poisoning may possibly be new threat. The species has a fairly restricted geographic range and shows a high degree of aggregation in the winter, when over 90 per cent of the estimated population occurs in only four caves. This high degree of aggregation makes the species very vulnerable.

Protective measures already taken: American Society of Mammalogists appointed a committee in the fall of 1963 to investigate the problem of reduction in bat populations; resolution approved by American Society of Mammalogists on June 17, 1964, that removal of bats from caves be discouraged except for scientific research and that molestation of bats in roosts or other unnecessary disturbance be discontinued. Construction of a gate across entrance to Carter Cave, Kentucky, where over 100,000

INDIANA BAT
Myotis sodalis

Myotis sodalis winter, to keep irresponsible persons from entering and destroying bats. Comprehensive study of life history and taxonomy taxonomy of the species published in 1962 by John S. Hall. Wynadotte Cave, a winter hibernating area, purchased by Indiana Department of Natural Resources. State laws prohibit taking of this species in several states.

Measures proposed: Educate public in regard to the interesting life history and biology of bats. Publicize economically important role of bats in insect control. Acquisition of caves. Preventing access by public to caves in which colonies occur.

Numbers in captivity: None known

Breeding potential in captivity: Unknown; probably no potential.

INDIANA BAT
Myotis sodalis

Selected References

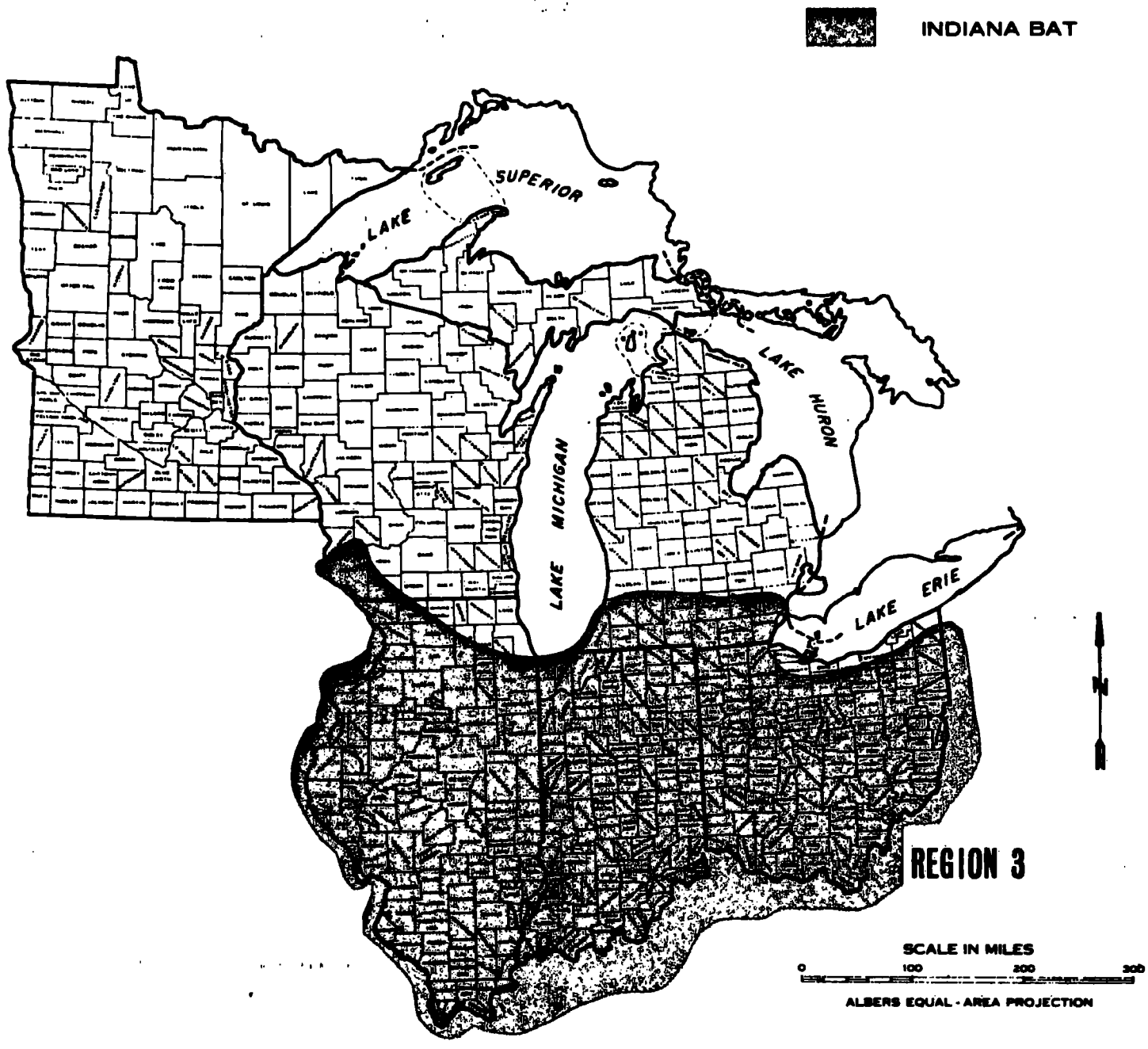
Davis, W. H., and W. Z. Lidicker, Jr. 1955. Myotis sodalis in Wisconsin. Jour. Mamm., 36(4):507.

Guthrie, Mary J. 1933. The reproductive cycles of some cave bats. Jour. Mamm., 14(3):199-216.

Hall, J. S. 1962. A life history and taxonomic study of the Indiana bats, Myotis sodalis. Reading Public Museum and Art Gallery, Sci. Publs. No. 12, 68 pp.

Jennings, W. L., and J. W. Layne. 1957. Myotis sodalis in Florida. Jour. Mamm., 38(2):259.

Mumford, R. E., and J. B. Cope. 1958. Summer records of Myotis sodalis in Indiana. Jour. Mamm., 39(4);586-587.


INDIANA BAT
LAKE SUPERIOR
LAKE MICHIGAN
LAKE HURON
LAKE ERIE
N
REGION 3
SCALE IN MILES
0 100 200 300
ALBERS EQUAL - AREA PROJECTION

PHONE CONVERSATION LOG

DATE 9-24-86 TDD# R05-8303-01J

TIME 12:50pm

General SITE Information on Endangered Species in Illinois

CONTACT Wayne Fisher - Wildlife Biologist - Fish and Wildlife Service - Field Office - Rock Island, IL PHONE (309) 793-5800

SUBJECT Designated Critical Habitats for the Indiana Bat in Cook County, IL.

REFERENCE #20
SITE NAME Penn Central
SITE ID ILD980606362

I explained to Mr. Fisher that E+E is contracted to the U.S. EPA. I explained to Mr. Fisher that I need documentation on whether or not there are any designated critical habitats for the Indiana Bat in Cook County, IL. Mr. Fisher said that according to their list, there is only one area in Illinois that has a designated critical habitat for the Indiana Bat. The Black Ball Mine in La Salle County, IL is this designated critical habitat for the Indiana Bat.

Cynthia Pugh

DATE 9-24-86

PHONE CONVERSATION LOG

DATE 9-24-86 TDD# R05-8303-01J

TIME 5:40pm

General: ~~SITE~~ Information on Population of Altgeld Gardens, Chi., IL

CONTACT Jan - Reference Librarian at the Chicago Public Library PHONE (312) 269-3002

REFERENCE #21

SITE NAME Penn Central (1)

SITE ID ILD980606362

SUBJECT Population of Altgeld Gardens Housing Complex - Chi.

I talked to a Reference Librarian (first name - Jan, he said "they do not normally give out last names") from the Government/Public Department at the Chicago Public Library. This department contains U.S., State, and local documents. I asked the Reference Librarian if he had information on the population of the Altgeld Gardens Housing Complex in Chicago.

The Reference Librian checked the "Chicago Housing Authority Statistical Report for 1982" and determined that there are 162 buildings in the Altgeld Gardens Housing Complex. There are 1,465 apartments in this Complex with a total population of 5,475 persons. The number of apartments per building was not available. The "Chicago Housing Authority

(Continued on next page)

Cynthia Pugh

DATE 9-24-86

PHONE CONVERSATION LOG

DATE 9-24-86 TDD# R05-8303-01J

TIME 5:40pm

General:
SITE Information on the Population of Altgeld Gardens, Chi., IL

CONTACT Jan-Reference Librarian at the Chicago Public Library PHONE (312) 269-3002

(2)

SUBJECT Population of Altgeld Gardens Housing Complex-Chi.

Statistical Report for 1982" is available in the Chicago Public Library.

Cynthia Pugh

DATE 9-24-86